

## EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	1	("20020018997").PN.	US-PGPUB; USPAT; EPO	OR	OFF	2006/03/29 10:51
L2	1	("4257774").PN.	US-PGPUB; USPAT; EPO	OR	OFF	2006/03/29 10:33
L3	83	plurality near5 primary near2 cells	US-PGPUB	OR	OFF	2006/03/29 10:51
L4	43	plurality near3 primary near2 cells	US-PGPUB	OR	OFF	2006/03/29 10:51
L5	39	l4 and @py>"2001"	US-PGPUB	OR	OFF	2006/03/29 11:14
L6	13292	(metal or ion or mercury or lead or zinc) same (nucleic or DNA) same binding	US-PGPUB; USPAT; EPO; DERWENT	OR	OFF	2006/03/29 11:16
L7	905	(metal or mercury or lead or zinc) same (nucleic or DNA) same binding same fluoresce\$	US-PGPUB; USPAT; EPO; DERWENT	OR	OFF	2006/03/29 11:23
L8	83	(metal or mercury or lead or zinc) same (nucleic or DNA) same binding same fluoresce\$ same (dye or bromide)	US-PGPUB; USPAT; EPO; DERWENT	OR	OFF	2006/03/29 11:17
L9	22	l8 and @py<"2002"	US-PGPUB; USPAT; EPO; DERWENT	OR	OFF	2006/03/29 11:17
L10	60	(heavy adj1 metal) same (nucleic or DNA) same binding same fluoresce\$	US-PGPUB; USPAT; EPO; DERWENT	OR	OFF	2006/03/29 12:00
L11	60	(heavy adj1 metal) same (nucleic or DNA) same binding same fluoresce\$	US-PGPUB; USPAT; EPO; DERWENT	OR	OFF	2006/03/29 11:24
L12	1	("6329145").PN.	USPAT; EPO	OR	OFF	2006/03/29 11:59
L13	4	(heavy adj1 metal) same (nucleic or DNA) same binding same compet\$	US-PGPUB; USPAT; EPO; DERWENT	OR	OFF	2006/03/29 12:03
L14	0	(heavy adj1 metal) same (nucleic or DNA) same compet\$ same fluoresce\$	US-PGPUB; USPAT; EPO; DERWENT	OR	OFF	2006/03/29 12:03

## EAST Search History

L15	0	(heavy adj1 metal) same (nucleic or DNA) same compet\$ same fluores\$	US-PGPUB; USPAT; EPO; DERWENT	OR	OFF	2006/03/29 12:04
L16	101	(heavy adj1 metal) same (nucleic or DNA) same fluores\$	US-PGPUB; USPAT; EPO; DERWENT	OR	OFF	2006/03/29 12:04
L17	7	l16 same (Hg or mercury or copper or chromium or zinc or Zn or Cd or Cu)	US-PGPUB; USPAT; EPO; DERWENT	OR	OFF	2006/03/29 12:05

## EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	0	Hgcl2 same (nucleic or DNA) same (fluorescence or fluorescent)	US-PGPUB; USPAT; EPO; DERWENT	OR	OFF	2006/03/29 13:23
L2	38	Hg same (nucleic or DNA) same (fluorescence or fluorescent)	US-PGPUB; USPAT; EPO; DERWENT	OR	OFF	2006/03/29 13:54
L3	2	(Hg or mercur\$) same quench\$ same Dna	US-PGPUB; USPAT; EPO; DERWENT	OR	OFF	2006/03/29 13:46
L4	0	(Hg or mercur\$) same quench\$ same toxicant	US-PGPUB; USPAT; EPO; DERWENT	OR	OFF	2006/03/29 13:46
L5	0	(Hg or mercur\$) same quench\$ same pollutant	US-PGPUB; USPAT; EPO; DERWENT	OR	OFF	2006/03/29 13:46
L6	68	(Hg or mercur\$) same quench\$ same detect\$	US-PGPUB; USPAT; EPO; DERWENT	OR	OFF	2006/03/29 13:46
L7	1	(Hg or mercur\$) same quench\$ same detect\$ same (nucleic or DNA)	US-PGPUB; USPAT; EPO; DERWENT	OR	OFF	2006/03/29 13:46
L10	118	(Hg or mercur\$ or Hgcl2) same quench\$ same (fluorescence or fluorescent)	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2006/03/29 13:57
L11	9	(Hg or mercur\$ or Hgcl2) near10 quench\$ near3 (fluorescence or fluorescent)	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2006/03/29 13:55
L12	2	l10 same (DNA or nucleic)	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2006/03/29 13:57

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FULL ESTIMATED COST	0.21	0.21

FULL ESTIMATED COST

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=> (heavy metal) and pollutant and DNA and (fluorescence or fluorescent)

L1	0	FILE AGRICOLA
L2	1	FILE BIOTECHNO
L3	0	FILE CONFSCI
L4	0	FILE HEALSAFE
L5	0	FILE IMSDRUGCONF
L6	1	FILE LIFESCI
L7	5	FILE PASCAL

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L8	7	(HEAVY METAL) AND POLLUTANT AND DNA AND (FLUORESCENCE OR FLUORESCENT)
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ACCESSION NUMBER: 2004-0005196 PASCAL

COPYRIGHT NOTICE: Copyright .COPYRGT. 2004 INIST-CNRS. All rights reserved.

TITLE (IN ENGLISH): A DNA expression array to detect toxic stress response in European flounder (Platichthys

flesus)  
AUTHOR: WILLIAMS T. D.; GENSBURG K.; MINCHIN S. D.; CHIPMAN J.  
K.  
CORPORATE SOURCE: School of Biosciences, The University of Birmingham,  
Edgbaston, Birmingham B15 2TT, United Kingdom  
SOURCE: Aquatic toxicology, (2003), 65(2), 141-157, refs. 2  
p.3/4  
ISSN: 0166-445X CODEN: AQTODG  
DOCUMENT TYPE: Journal  
BIBLIOGRAPHIC LEVEL: Analytic  
COUNTRY: Netherlands  
LANGUAGE: English  
AVAILABILITY: INIST-18841, 354000112891060020

AN 2004-0005196 PASCAL

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AB As a first stage in developing a DNA array-based approach to investigating the effects of pollutants on an environmentally relevant European fish species, we have constructed a 160-gene custom microarray for European flounder. Degenerate primers were used to amplify 110 different fragments of stress-related and other genes from European flounder cDNA and genomic DNA. Additionally, 22 fragments were obtained by suppressive subtractive hybridisation (SSH). These fragments were cloned and sequenced, then, with additional control genes, used to create a cDNA microarray for flounder. After optimisation of the arraying process, hepatic mRNA was isolated from flounder caught in the polluted Tyne and relatively unpolluted Aude estuaries. Fluorescent cDNA probes were synthesised from the mRNA and used in dual-colour hybridisations to the microarray. A number of transcripts were differentially expressed between Tyne and Aude female flounder but these changes were not significant, due to high inter-individual variation. However, in comparisons between Tyne and Aude male flounder, 11 transcripts were found to significantly differ in expression ( $P < 0.05$ ). Seven transcripts were more highly expressed in the Tyne male fish (CYP1A, UDPGT,  $\alpha$ -2HS-glycoprotein, dihydropyrimidine dehydrogenase, Cu/Zn SOD, aldehyde dehydrogenase and paraoxonase). Four transcripts (Elongation factor 1 (EF1), EF2, Int-6 and complement component C3) were found to be significantly less abundant in the Tyne male fish. Selected genes were assayed by real-time PCR, then normalised to  $\alpha$ -tubulin. These assays confirmed the significance of the array results for CYP1A, UDPGT and EF1, but not for Cu/Zn SOD. This study provides a link between traditional single-gene biomarker studies and the emerging field of eco-toxicogenomics; demonstrating the utility of microarray studies on environmentally sampled, non-model organisms.

L9 ANSWER 2 OF 7 LIFESCI COPYRIGHT 2006 CSA on STN

ACCESSION NUMBER: 2004:8736 LIFESCI

TITLE: Metabolic interactions between low doses of benzo[a]pyrene and tributyltin in arctic charr (*Salvelinus alpinus*): a long-term in vivo study

AUTHOR: Padros, J.; Pelletier, E.\*; Ribeiro, C.O.

CORPORATE SOURCE: Institut des sciences de la mer de Rimouski, Universitedu Quebec aRimouski, 310 allée des Ursulines, Rimouski, Quebec, Canada G5L 3A1; E-mail: emilien.pelletier@uqar.qc.ca

SOURCE: Toxicology and Applied Pharmacology [Toxicol. Appl. Pharmacol.], (20031001) vol. 192, no. 1, pp. 45-55.  
ISSN: 0041-008X.

DOCUMENT TYPE: Journal

FILE SEGMENT: X

LANGUAGE: English

SUMMARY LANGUAGE: English

AB We have previously reported that short-term, single exposure to a high dose of tributyltin (TBT), a widely used antifouling biocide, inhibited both the in vivo metabolism and metabolic activation of the carcinogenic polycyclic aromatic hydrocarbon benzo[a]pyrene (BaP) in fish; (BaP), in turn, stimulated TBT metabolism. Here, we provide further mechanistic evidence of mutual metabolic interactions between BaP and TBT in response to long-term, repeated exposures to low doses. Juvenile Arctic charr (*Salvelinus alpinus*) received 10 separate ip injections (a single

injection every 6 days) of BaP (3 mg/kg), TBT (0.3 mg/kg), or both in combination; control fish received corn oil vehicle only. Two days after the 2 super(nd) (Day 8), 6 super(th) (Day 32), and 10 super(th) dose (Day 56), blood, bile, and liver samples were collected and analyzed for a suite of biomarkers. HPLC/fluorescence analysis indicated that TBT cotreatment inhibited the formation of (+)-anti-BaP diol-epoxide adducts with plasma albumin (53%, Day 8), hepatic DNA (27%, Day 32), or both albumin and globin (50 and 58%, Day 56) compared to BaP alone. This antagonistic interaction was associated with a time-dependent modulation (inhibition at Day 8, enhancement at Day 32) of both cytochrome P450 (P450)1A-mediated ethoxyresorufin O-deethylase (EROD) activity and biliary BaP metabolite formation. TBT cotreatment also inhibited (39%) the BaP-mediated induction of hepatic glutathione S-transferase (GST) activity observed at Day 8. Treatment with TBT alone increased EROD activity (60%) at Day 32, but decreased both GST activity (70 and 37%) and glutathione content (24% and 16%) at Days 32 and 56, respectively. GC/MS analysis revealed that, at Day 56, BaP cotreatment increased (200%) the levels of biliary butyltin compounds, including mono- and dibutyltin metabolites. This potentiative interaction was associated with a protective effect of BaP cotreatment against the TBT-mediated decreases in GST activity and glutathione content. The current results demonstrate that, whereas TBT inhibited BaP bioactivation via a time-dependent modulation of P4501A induction, BaP stimulated the Phase II metabolism of TBT and/or its biliary excretion. The mutual metabolic interactions between these two widespread aquatic pollutants reinforce the need for long-term in vivo interactive studies at low doses.

L9 ANSWER 3 OF 7 PASCAL COPYRIGHT 2006 INIST-CNRS. ALL RIGHTS RESERVED. on STN

ACCESSION NUMBER: 2001-0229693 PASCAL  
COPYRIGHT NOTICE: Copyright .COPYRGT. 2001 INIST-CNRS. All rights reserved.  
TITLE (IN ENGLISH): Toxic effects of chromium acetate hydroxide on cells cultivated in vitro  
AUTHOR: RUDOLF Emil; PEYCHL Jan; CERVINKA Miroslav  
CORPORATE SOURCE: Department of Medical Biology and Genetics, Charles University in Prague, Faculty of Medicine in Hradec Kralove, Simkova 870, Hradec Kralove I 500, Czech Republic  
SOURCE: ATLA. Alternatives to laboratory animals, (2001), 29(2), 163-177, 20 refs.  
ISSN: 0261-1929  
DOCUMENT TYPE: Journal  
BIBLIOGRAPHIC LEVEL: Analytic  
COUNTRY: United Kingdom  
LANGUAGE: English  
AVAILABILITY: INIST-22450, 354000095048960050  
AN 2001-0229693 PASCAL  
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AB Many human activities, particularly industrial ones, result in an ever-growing production of toxic waste materials. The dynamics of the toxic effects of chromium acetate hydroxide, which is found in high concentrations in a waste sediment produced in the Czech Republic, were assessed by using a battery of in vitro tests carried out on two cell lines: L-929 (mouse fibroblasts) and Hep 2 (human laryngeal cells). Various markers of cell damage were assessed by phase-contrast, video and fluorescence microscopy, fluorometry, and DNA analysis. Chromium acetate hydroxide, over a concentration range of 1-0.02mol/l induced immediate cell death by fixation, whereas, at 0.002mol/l, the treated cells died in a much slower, more discrete manner. All the detected markers of cell damage, whether immediate or slow, clearly demonstrated that the cells died by necrosis. On the other hand, test concentration of 0.001mol/l appeared to constitute a threshold at which no pathological changes of Hep 2 cells were observed over 96 hours. We conclude that chromium acetate hydroxide has a high toxic potential in vitro, which should be considered when studying the toxicity of waste materials containing it.

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ACCESSION NUMBER: 2002-0125591 PASCAL  
COPYRIGHT NOTICE: Copyright .COPYRGT. 2002 INIST-CNRS. All rights reserved.  
TITLE (IN ENGLISH): In vitro suppression of thymocyte apoptosis by metal-rich complex environmental mixtures: potential role of zinc and cadmium excess  
AUTHOR: CHUKHLOVIN Alexei B.; TOKALOV Sergei V.; YAGUNOV Alexei S.; WESTENDORF Johannes; REINCKE Heinrich; KARBE Ludwig  
CORPORATE SOURCE: Center of Hematology, St. Petersburg State Medical University, 6/8 L. Tolstoy St., St. Petersburg 187022, Russian Federation; Central Research Institute of Roentgenology and Radiology, Pesochny-2, 189646, St. Petersburg, Russian Federation; Institute of Experimental and Clinical Pharmacology and Toxicology, University of Hamburg, Vogt-Koelln ST. 30, 22527, Hamburg, Germany, Federal Republic of; Elbe River Water Quality Board, Nessdeich 120-121, 21129, Hamburg, Germany, Federal Republic of; Institute of Hydrobiology and Fisheries Science, University of Hamburg, Zeiseweg 9, 22765, Hamburg, Germany, Federal Republic of  
SOURCE: Science of the total environment, (2001), 281(1-3), 153-163, refs. 1 p.1/4  
ISSN: 0048-9697 CODEN: STENDL  
DOCUMENT TYPE: Journal  
BIBLIOGRAPHIC LEVEL: Analytic  
COUNTRY: Ireland  
LANGUAGE: English  
AVAILABILITY: INIST-15662, 354000103409260120

AN 2002-0125591 PASCAL

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AB Excessive amounts of **heavy metals** (e.g. Zn, Cu, Mn, Cr) are accumulated in river bottom sediments (RBS), being available to humans and animals along food chains. Increased exposure of mammals to certain metals (Cr, Cu) induces immunosuppression, due to **DNA** damage and decreased survival of lymphoid cells. By contrast, excess of Zn and Cd causes inhibition of apoptosis thus suggesting increased survival of genetically mutated cells and higher cancer risks in exposed populations. Rat thymic lymphocytes represent a well-established model for apoptosis testing. The primary goal of our study was to assess the degree of apoptosis modulation with a number of RBS extracts differing in their metal contents. A series of freshly deposited RBS was collected at nine sampling stations along the Elbe River. All sediments were rich in Fe, Mn and Zn. The contents of Cu, Cr, Ni, Cd, Hg, Pb and As were much lower and interrelated. The short-term cytotoxicity of aqueous sediment extracts was assessed, using the following criteria: total cell counts; incidence of apoptosis and necrosis (morphological detection by **fluorescent** microscopy); and nuclear chromatin decay (by **DNA** flow cytometry). RBS extracts produced both apoptosis and necrosis of thymocytes. High contents of zinc and other **heavy metals** in the samples correlated with decreased thymocyte apoptosis ( $r = -0.543$  to  $-0.608$ ,  $P < 0.01$ ). The rates of thymocyte damage showed a distinct dependence on the time and region of sampling. Apoptosis modulation was also tested with pure salts of Mn(II), Zn(II), Cu(II), Cr(III) and Cd(II), at the test concentrations of 1, 10 and 100  $\mu\text{M}$ . Cu(II) and Cr(III) proved to induce marked dose-related apoptosis whereas Zn(II) ions caused significant suppression of apoptosis. These effects were similar to those trends observed with metal-rich sediments. In the present study, **DNA** flow cytometry proved to be a less sensitive index of cell death than morphological assay of apoptosis and/or necrosis. In summary, inhibition of lymphocyte apoptosis by RBS extracts and pure metals is associated with excess of zinc and, probably, cadmium. The proposed model of lymphoid cell apoptosis is a promising tool for screening cytotoxic effects of complex environmental samples.



ACCESSION NUMBER: 2002-0131007 PASCAL  
COPYRIGHT NOTICE: Copyright .COPYRGT. 2002 INIST-CNRS. All rights reserved.  
TITLE (IN ENGLISH): Current bioremediation practice and perspective  
AUTHOR: IWAMOTO Tomotada; NASU Masao  
CORPORATE SOURCE: Department of Bacteriology, Kobe Institute of Health, 4-6 Minatojima-nakamachi, Chuo-ku, Kobe 650-0046, Japan; Environmental Science and Microbiology, Graduate School of Pharmaceutical Sciences, Osaka University, 1-6 Yamada-oka, Suita, Osaka 565-0871, Japan  
SOURCE: Journal of bioscience and bioengineering, (2001), 92(1), 1-8, 83 refs.  
ISSN: 1389-1723  
DOCUMENT TYPE: Journal  
BIBLIOGRAPHIC LEVEL: Analytic  
COUNTRY: Japan  
LANGUAGE: English  
AVAILABILITY: INIST-8234, 354000096051070010

AN 2002-0131007 PASCAL  
CP Copyright .COPYRGT. 2002 INIST-CNRS. All rights reserved.  
AB The use of microbes to clean up polluted environments, bioremediation, is a rapidly changing and expanding area of environmental biotechnology. Although bioremediation is a promising approach to improve environmental conditions, our limited understanding of biological contribution to the effect of bioremediation and its impact on the ecosystem has been an obstacle to make the technology more reliable and safer. Providing fundamental data to resolve these issues, i.e., the behavior of the target bacteria directly related to the degradation of contaminants and the changes in microbial communities during bioremediation, has been a challenge for microbiologists since many environmental bacteria cannot yet be cultivated by conventional laboratory techniques. The application of culture-independent molecular biological techniques offers new opportunities to better understand the dynamics of microbial communities. **Fluorescence** in situ hybridization (FISH), in situ PCR, and quantitative PCR are expected to be powerful tools for bioremediation to detect and enumerate the target bacteria that are directly related to the degradation of contaminants. Nucleic acid based molecular techniques for fingerprinting the 16S ribosomal **DNA** (rDNA) of bacterial cells, i.e., denaturing gradient gel electrophoresis (DGGE) and terminal restriction fragment length polymorphism (T-RFLP), enable us to monitor the changes in bacterial community in detail. Such advanced molecular microbiological techniques will provide new insights into bioremediation in terms of process optimization, validation, and the impact on the ecosystem, which are indispensable data to make the technology reliable and safe.

L9 ANSWER 6 OF 7 BIOTECHNO COPYRIGHT 2006 Elsevier Science B.V. on STN  
ACCESSION NUMBER: 2000:30944926 BIOTECHNO  
TITLE: Transgenic zebrafish as sentinels for aquatic pollution  
AUTHOR: Carvan III M.J.; Dalton T.P.; Stuart G.W.; Nebert D.W.  
CORPORATE SOURCE: D.W. Nebert, Department of Environmental Health, Univ. of Cincinnati Medical Center, P.O. Box 670056, Cincinnati, OH 45267-0056, United States.  
E-mail: dan.nebert@uc.edu  
SOURCE: Annals of the New York Academy of Sciences, (2000), 919/- (133-147), 56 reference(s)  
CODEN: ANYAAO ISSN: 0077-8923  
DOCUMENT TYPE: Journal; Conference Article  
COUNTRY: United States  
LANGUAGE: English  
SUMMARY LANGUAGE: English

AN 2000:30944926 BIOTECHNO  
AB Using the golden mutant zebrafish having a decrease in interfering pigmentation, we are developing transgenic lines in which **DNA** motifs that respond to selected environmental **pollutants** are capable of activating a reporter gene that can be easily assayed. We have begun with three response elements that recognize three important classes

of foreign chemicals. Aromatic hydrocarbon response elements (AHREs) respond to numerous polycyclic hydrocarbons and halogenated coplanar molecules such as 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD; dioxin) and polychlorinated biphenyls. Electrophile response elements (EPREs) respond to quinones and numerous other potent electrophilic oxidants. Metal response elements (MREs) respond to **heavy metal** cations such as mercury, copper, nickel, cadmium, and zinc. Soon, we will include estrogen response elements (EREs) to detect the effects of environmental endocrine disruptors, and retinoic acid response elements (RARE, RXRE) to detect the effects of retinoids in the environment. Each of these substances is known to be bioconcentrated in fish to varying degrees; for example, 10<sup>sup.</sup>-<sup>sup.</sup>1<sup>sup.</sup>7 M TCDD in a body of water becomes concentrated to approximately 10<sup>sup.</sup>-<sup>sup.</sup>1<sup>sup.</sup>2 M TCDD in a fish, where it would act upon the AHRE motif and turn on the luciferase (LUC) reporter gene. The living fish as a sentinel will not only be assayed intact in the luminometer, but - upon several days or weeks of depuration - would be usable again. To date, we have established that zebrafish transcription factors are able to recognize both mammalian and trout AHRE, EPRE, and MRE sequences in a dose-dependent and chemical-class-specific manner, and that expression of both the LUC and jellyfish green **fluorescent** protein (GFP) reporter genes is easily detected in zebrafish cell cultures and in the intact live zebrafish. Variations in sensitivity of this model system can be achieved by increasing the copy number of response elements and perhaps by altering the sequence of each core consensus response element and flanking regions. This transgenic technology should allow for a simple, exquisitely sensitive, and inexpensive assay for monitoring aquatic pollution. We have already initiated studies using sentinel zebrafish to monitor a public drinking water source.

L9 ANSWER 7 OF 7 PASCAL COPYRIGHT 2006 INIST-CNRS. ALL RIGHTS RESERVED. on STN

ACCESSION NUMBER: 1998-0538295 PASCAL  
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TITLE (IN ENGLISH): Disruption of microtubule assembly and spindle formation as a mechanism for the induction of aneuploid cells by sodium arsenite and vanadium pentoxide  
AUTHOR: RAMREZ P.; EASTMOND D. A.; LACLETTE J. P.; OSTROSKY WEGMAN P.  
CORPORATE SOURCE: 04510 Mexico, DF, Mexico; 04510 Mexico, DF, Mexico; Riverside, CA 92521, United States  
SOURCE: Mutation research. Reviews in mutation research, (1997), 386(3), 291-298  
ISSN: 1383-5742  
DOCUMENT TYPE: Journal  
BIBLIOGRAPHIC LEVEL: Analytic  
COUNTRY: Netherlands  
LANGUAGE: English  
SUMMARY LANGUAGE: English  
AVAILABILITY: INIST-12206F, 354000071625070020

AN 1998-0538295 PASCAL

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AB Copyright (c) 1997 Elsevier Science B.V. All rights reserved. Arsenic

and vanadium are important environmental and industrial **pollutants**. Due to their widespread occurrence and potential genotoxicity, we studied the aneuploidy-inducing effects of these elements in cultured human lymphocytes using a variety of techniques including **fluorescence** in situ hybridization (FISH) with **DNA** probes for chromosomes 1 and 7, immunostaining of the lymphocyte spindle apparatus, and an in vitro assay measuring the polymerization and depolymerization of tubulin. Dose-related increases in hyperdiploidy were seen in lymphocyte cultures treated with sodium arsenite (NaAsO<sub>2</sub>) or vanadium pentoxide (V<sub>2</sub>O<sub>5</sub>) over concentrations ranging from 0.001 to 0.1 μM. NaAsO<sub>2</sub>-treated cells from different donors exhibited similar hyperdiploid frequencies, whereas substantial inter-individual variability was seen in the V<sub>2</sub>O<sub>5</sub>-treated cells. Examination of the spindle apparatus using

an anti- $\alpha$ -tubulin antibody indicated that these compounds might disrupt spindle formation by interacting with microtubules. Additional in vitro assays using purified tubulin indicated that both compounds inhibited microtubule assembly and induced tubulin depolymerization. These results indicate that in vitro exposure to both NaAsO<sub>2</sub> and V.sub.20.sub.5 can induce aneuploidy in human lymphocytes, and that this effect may occur through a disruption of microtubule function.

=> (DNA or nucleic) (12A) (mercury or cd or Hg or pb or cu or copper) (fluorescence or fluorescent) MISSING OPERATOR COPPER) (FLUORESCEN

The search profile that was entered contains terms or nested terms that are not separated by a logical operator.

=> (DNA or nucleic) (12A) (mercury or cd or Hg or pb or cu or copper) (10A) (fluorescence or fluorescent)

L10 6 FILE AGRICOLA  
L11 35 FILE BIOTECHNO  
L12 0 FILE CONFSCI  
L13 0 FILE HEALSAFE  
L14 0 FILE IMSDRUGCONF  
L15 26 FILE LIFESCI  
L16 21 FILE PASCAL

TOTAL FOR ALL FILES

L17 88 (DNA OR NUCLEIC) (12A) (MERCURY OR CD OR HG OR PB OR CU OR COPPER) (10A) (FLUORESCENCE OR FLUORESCENT)

=> l77 and (dissociate or dissociation)

L77 NOT FOUND

The L-number entered could not be found. To see the definition of L-numbers, enter DISPLAY HISTORY at an arrow prompt (=>).

=> l17 and (dissociate or dissociation)

L18 0 FILE AGRICOLA  
L19 3 FILE BIOTECHNO  
L20 0 FILE CONFSCI  
L21 0 FILE HEALSAFE  
L22 0 FILE IMSDRUGCONF  
L23 0 FILE LIFESCI  
L24 0 FILE PASCAL

TOTAL FOR ALL FILES

L25 3 L17 AND (DISSOCIATE OR DISSOCIATION)

=> dup rem.

ENTER L# LIST OR (END):l25

DUPLICATE IS NOT AVAILABLE IN 'IMSDRUGCONF'.

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PROCESSING COMPLETED FOR L25

L26 2 DUP REM L25 (1 DUPLICATE REMOVED)

=> d l26 ibib abs total

L26 ANSWER 1 OF 2 BIOTECHNO COPYRIGHT 2006 Elsevier Science B.V. on STN DUPLICATE

ACCESSION NUMBER: 2001:32249450 BIOTECHNO  
TITLE: Caffeine **dissociates** complexes between DNA and intercalating dyes: Application for bleaching fluorochrome-stained cells for their subsequent restaining and analysis by laser scanning cytometry  
AUTHOR: Bedner E.; Du L.; Traganos F.; Darzynkiewicz Z.  
CORPORATE SOURCE: Dr. Z. Darzynkiewicz, Brander Cancel Research Institute, New York Medical College, 19 Bradhurst Avenue, Hawthorne, NY 10523, United States.  
E-mail: darzynk@nymc.edu  
SOURCE: Cytometry, (01 JAN 2001), 43/1 (38-45), 26 reference(s)  
CODEN: CYTODQ ISSN: 0196-4763

DOCUMENT TYPE: Journal; Article  
COUNTRY: United States  
LANGUAGE: English  
SUMMARY LANGUAGE: English

AN 2001:32249450 BIOTECHNO

AB Background: Removal of the nucleic acid-bound fluorochrome is desirable when stained cells have to be reanalyzed using other fluorochromes. It is also often desirable to remove DNA-bound antitumor drugs from drug-treated cells, to improve cell staining. We have previously observed that in aqueous solutions, the methylxanthine caffeine (CFN) decreases interactions between planar aromatic molecules such as intercalating dyes or antitumor drugs and nucleic acids. The aim of this study was to explore whether this property of CFN can be utilized to remove the DNA-bound intercalating dyes propidium iodide (PI) or 7-aminoactinomycin D (7-AAD) from the cells and whether the bleached cells can be restained and reanalyzed. Methods: HL-60 cells were fixed in 70% ethanol and their DNA was stained with PI or 7-AAD. The cells were then rinsed with a 0.05 M solution of CFN in phosphate-buffered saline (PBS) or with PBS alone. The decrease in intensity of cell fluorescence during rinsing was measured by laser scanning cytometry (LSC) to obtain the bleaching kinetics of individual cells. The bleached cells were then restained with PI, 7-AAD, or the protein-specific fluorochrome sulforhodamine 101(S101). Their fluorescence was measured again by LSC. In addition, free DNA was subjected to gel electrophoresis, DNA bands in the gels were stained with ethidium bromide (EB), and the gels were rinsed with a solution of CFN or PBS to bleach the DNA band's fluorescence. Results: Rinsing the PI or 7-AAD-stained cells with solutions of CFN led to nearly complete removal of PI and a more than 75% decrease in 7-AAD fluorescence after 10 min. The rinse with PBS decreased the PI cell fluorescence intensity by less than 30% and the 7-AAD fluorescence by about 50%. The differences in kinetics of PI or 7-AAD removal by CFN from G.sub.2/M versus G.sub.1 cells suggest that these intercalators bind more strongly to DNA in chromatin of G.sub.2/M than G.sub.1 cells. The CFN-bleached cells were then successfully stained with S101 and again with PI or 7-AAD. The bivariate analysis of the LSC merged files of the cells sequentially stained with PI and S101 revealed typical DNA/protein distributions. The fluorescence of EB-stained DNA bands in gels was also nearly completely removed by rinsing gels in 0.05 M CFN; PBS alone had a distinctly lesser effect. Conclusion: Solutions of CFN can dissociate the DNA-bound PI, 7-AAD, EB, and possibly other intercalating fluorochromes. The bleached cells can be restained and reanalyzed by LSC. This approach can also be used to remove such fluorochromes from nucleic acids immobilized in gels and perhaps in other solid matrices. Analysis of the kinetics of fluorochrome removal from cells can possibly be used to study their binding affinities to nucleic acids in situ. .COPYRGT. 2001 Wiley-Liss, Inc.

L26 ANSWER 2 OF 2 BIOTECHNO COPYRIGHT 2006 Elsevier Science B.V. on STN

ACCESSION NUMBER: 1996:26054287 BIOTECHNO  
TITLE: Equilibrium **dissociation** and unfolding of the dimeric human papillomavirus strain-16 E2 DNA-binding domain

AUTHOR: Mok Y.-K.; De Prat Gay G.; Butler P.J.; Bycroft M.  
CORPORATE SOURCE: MRC Unit for Protein Function/Design, Department of Chemistry, University of Cambridge, Lensfield Road, Cambridge CB2 1EW, United Kingdom.

SOURCE: Protein Science, (1996), 5/2 (310-319)  
CODEN: PRCIEI ISSN: 0961-8368

DOCUMENT TYPE: Journal; Article  
COUNTRY: United States  
LANGUAGE: English  
SUMMARY LANGUAGE: English

AN 1996:26054287 BIOTECHNO

AB The equilibrium unfolding reaction of the C-terminal 80-amino-acid dimeric DNA-binding domain of human papillomavirus (HPV) strain 16 E2 protein has been investigated using **fluorescence**, far-UV CD, and equilibrium sedimentation. The stability of the HPV-16 E2 DNA-binding domain is concentration-dependent, and the unfolding reaction is well described as a two-state transition from folded dimer to

unfolded monomer. The conformational stability of the protein,  $\Delta G(H.sub.2O)$ , was found to be 9.8 kcal/mol at pH 5.6, with the corresponding equilibrium unfolding/dissociation constant,  $K(u)$ , being  $6.5 \times 10^{sup.-sup.8}$  M. Equilibrium sedimentation experiments give a  $K(d)$  of  $3.0 \times 10^{sup.-sup.8}$  M, showing an excellent agreement between the two different techniques. Denaturation by temperature followed by the change in ellipticity also shows a concomitant disappearance of secondary and tertiary structures. The  $K(u)$  changes dramatically at physiologically relevant pH's: with a change in pH from 6.1 to 7.0, it goes from  $5.5 \times 10^{sup.-sup.8}$  M to  $4.4 \times 10^{sup.1.sup.0}$  M. Our results suggest that, at the very low concentration of protein where DNA binding is normally measured (e.g.,  $10^{sup.-sup.1.sup.1}$  M), the protein is predominantly monomeric and unfolded. They also stress the importance of the coupling between folding and DNA binding.

=> (toxicity or toxicant) and (heavy metal) and (fluorescence or fluorescent)

```
L27      10 FILE AGRICOLA
L28      17 FILE BIOTECHNO
L29       0 FILE CONFSCI
L30      10 FILE HEALSAFE
L31       0 FILE IMSDRUGCONF
L32      68 FILE LIFESCI
L33     253 FILE PASCAL
```

TOTAL FOR ALL FILES

```
L34      358 (TOXICITY OR TOXICANT) AND (HEAVY METAL) AND (FLUORESCENCE OR
          FLUORESCENT)
```

=> l34 and (DNA or nucleic)

```
L35       0 FILE AGRICOLA
L36       4 FILE BIOTECHNO
L37       0 FILE CONFSCI
L38       1 FILE HEALSAFE
L39       0 FILE IMSDRUGCONF
L40       6 FILE LIFESCI
L41      22 FILE PASCAL
```

TOTAL FOR ALL FILES

```
L42      33 L34 AND (DNA OR NUCLEIC)
```

=> dup rem

ENTER L# LIST OR (END):l42

DUPLICATE IS NOT AVAILABLE IN 'IMSDRUGCONF'.

ANSWERS FROM THESE FILES WILL BE CONSIDERED UNIQUE

PROCESSING COMPLETED FOR L42

```
L43      29 DUP REM L42 (4 DUPLICATES REMOVED)
```

=> l43 and py<2001

```
L44       0 S L43
L45       0 FILE AGRICOLA
L46       4 S L43
L47       1 FILE BIOTECHNO
L48       0 S L43
'2001' NOT A VALID FIELD CODE
L49       0 FILE CONFSCI
L50       1 S L43
L51       0 FILE HEALSAFE
L52       0 S L43
L53       0 FILE IMSDRUGCONF
L54       4 S L43
L55       3 FILE LIFESCI
L56      20 S L43
```

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PASSWORD:

TERMINAL (ENTER 1, 2, 3, OR ?):2

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- NEWS 19 MAR 01 INSPEC reloaded and enhanced
- NEWS 20 MAR 03 Updates in PATDPA; addition of IPC 8 data without attributes
- NEWS 21 MAR 08 X.25 communication option no longer available after June 2006
- NEWS 22 MAR 22 EMBASE is now updated on a daily basis

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=> file .meeting

'EVENTLINE' IS NOT A VALID FILE NAME

Enter "HELP FILE NAMES" at an arrow prompt (=>) for a list of files that are available. If you have requested multiple files, you can specify a corrected file name or you can enter "IGNORE" to continue accessing the remaining file names entered.

ENTER A FILE NAME OR (IGNORE):ignore

'MEDICONF' IS NOT A VALID FILE NAME

Enter "HELP FILE NAMES" at an arrow prompt (=>) for a list of files that are available. If you have requested multiple files, you can specify a corrected file name or you can enter "IGNORE" to continue accessing the remaining file names entered.

ENTER A FILE NAME OR (IGNORE):ignore

COST IN U.S. DOLLARS	ENTRY	SINCE FILE SESSION	TOTAL
FULL ESTIMATED COST		0.21	0.21

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=> (heavy metal) and pollutant and DNA and (fluorescence or fluorescent)

L1 0 FILE AGRICOLA  
L2 1 FILE BIOTECHNO  
L3 0 FILE CONFSCI  
L4 0 FILE HEALSAFE  
L5 0 FILE IMSDRUGCONF  
L6 1 FILE LIFESCI  
L7 5 FILE PASCAL

TOTAL FOR ALL FILES

L8 7 (HEAVY METAL) AND POLLUTANT AND DNA AND  
(FLUORESCENCE OR FLUORES  
CENT)

=> dup rem

ENTER L# LIST OR (END):18

DUPLICATE IS NOT AVAILABLE IN 'IMSDRUGCONF'.

ANSWERS FROM THESE FILES WILL BE CONSIDERED UNIQUE  
PROCESSING COMPLETED FOR L8

L9 7 DUP REM L8 (0 DUPLICATES REMOVED)

=> d l9 ibib abs total

L9 ANSWER 1 OF 7 PASCAL COPYRIGHT 2006 INIST-CNRS. ALL RIGHTS  
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STN

ACCESSION NUMBER: 2004-0005196 PASCAL

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reserved.

**TITLE (IN ENGLISH):** A DNA expression array to detect toxic stress response in European flounder (*Platichthys flesus*)

**AUTHOR:** WILLIAMS T. D.; GENSBERG K.; MINCHIN S. D.; CHIPMAN J.

K.

**CORPORATE SOURCE:** School of Biosciences, The University of Birmingham, Edgbaston, Birmingham B15 2TT, United Kingdom

**SOURCE:** Aquatic toxicology, (2003), 65(2), 141-157, refs. 2  
p.3/4

ISSN: 0166-445X CODEN: AQTODG

**DOCUMENT TYPE:** Journal

**BIBLIOGRAPHIC LEVEL:** Analytic

**COUNTRY:** Netherlands

**LANGUAGE:** English

**AVAILABILITY:** INIST-18841, 354000112891060020

AN 2004-0005196 PASCAL

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**AB** As a first stage in developing a DNA array-based approach to investigating the effects of pollutants on an environmentally relevant European fish species, we have constructed a 160-gene custom microarray for European flounder. Degenerate primers were used to amplify 110 different fragments of stress-related and other genes from European flounder cDNA and genomic DNA. Additionally, 22 fragments were obtained by suppressive subtractive hybridisation (SSH). These fragments were cloned and sequenced, then, with additional control genes, used to create a cDNA microarray for flounder. After optimisation of the arraying process, hepatic mRNA was isolated from flounder caught in the polluted Tyne and relatively unpolluted Aude estuaries. Fluorescent cDNA probes were synthesised from the mRNA and used in dual-colour hybridisations to the microarray. A number of transcripts were differentially expressed between Tyne and Aude female flounder but these changes were not significant, due to high inter-individual variation. However, in comparisons between Tyne and Aude male flounder, 11 transcripts were found to significantly differ in expression ( $P < 0.05$ ). Seven transcripts were more highly expressed in the Tyne male fish (CYP1A, UDPGT,  $\alpha$ -2HS-glycoprotein, dihydropyrimidine dehydrogenase, Cu/Zn SOD, aldehyde dehydrogenase and paraoxonase). Four transcripts (Elongation factor 1 (EF1), EF2, Int-6 and complement component C3) were found to be significantly less abundant in the Tyne male fish. Selected genes were assayed by real-time PCR, then normalised to  $\alpha$ -tubulin. These assays confirmed the significance of the array results for CYP1A, UDPGT and EF1, but not for Cu/Zn SOD. This study provides a link between traditional single-gene biomarker studies and the emerging field of eco-toxicogenomics, demonstrating the utility of microarray studies on

environmentally sampled, non-model organisms.

L9 ANSWER 2 OF 7 LIFESCI COPYRIGHT 2006 CSA on STN

ACCESSION NUMBER: 2004:8736 LIFESCI

TITLE: Metabolic interactions between low doses of benzo[a]pyrene and tributyltin in arctic charr (*Salvelinus alpinus*): a long-term in vivo study

AUTHOR: Padros, J.; Pelletier, E.\*; Ribeiro, C.O.

CORPORATE SOURCE: Institut des sciences de la mer de Rimouski, Universitedu Quebec aRimouski, 310 allée des Ursulines, Rimouski, Quebec, Canada G5L 3A1; E-mail: emilien.pelletier@uqar.qc.ca

SOURCE: Toxicology and Applied Pharmacology [Toxicol. Appl. Pharmacol.], (20031001) vol. 192, no. 1, pp. 45-55. ISSN: 0041-008X.

DOCUMENT TYPE: Journal

FILE SEGMENT: X

LANGUAGE: English

SUMMARY LANGUAGE: English

AB We have previously reported that short-term, single exposure to a high dose of tributyltin (TBT), a widely used antifouling biocide, inhibited both the in vivo metabolism and metabolic activation of the carcinogenic polycyclic aromatic hydrocarbon benzo[a]pyrene (BaP) in fish; (BaP), in turn, stimulated TBT metabolism. Here, we provide further mechanistic evidence of mutual metabolic interactions between BaP and TBT in response to long-term, repeated exposures to low doses. Juvenile Arctic charr (*Salvelinus alpinus*) received 10 separate ip injections (a single injection every 6 days) of BaP (3 mg/kg), TBT (0.3 mg/kg), or both in combination; control fish received corn oil vehicle only. Two days after the 2 super(nd) (Day 8), 6 super(th) (Day 32), and 10 super(th) dose (Day 56), blood, bile, and liver samples were collected and analyzed for a suite of biomarkers. HPLC/fluorescence analysis indicated that TBT cotreatment inhibited the formation of (+)-anti-BaP diol-epoxide adducts with plasma albumin (53%, Day 8), hepatic DNA (27%, Day 32), or both albumin and globin (50 and 58%, Day 56) compared to BaP alone. This antagonistic interaction was associated with a time-dependent modulation (inhibition at Day 8, enhancement at Day 32) of both cytochrome P450 (P450)1A-mediated ethoxyresorufin O-deethylase (EROD) activity and biliary BaP metabolite formation. TBT cotreatment also inhibited (39%) the BaP-mediated induction of hepatic glutathione S-transferase (GST) activity observed at Day 8. Treatment with TBT alone increased EROD activity (60%) at Day 32, but decreased both GST activity (70 and 37%) and glutathione content (24% and 16%) at Days 32 and 56, respectively. GC/MS analysis revealed that, at Day 56, BaP cotreatment increased (200%) the levels of biliary butyltin compounds, including mono- and dibutyltin metabolites. This potentiative interaction was associated with a protective effect of

BaP cotreatment against the TBT-mediated decreases in GST activity and glutathione content. The current results demonstrate that, whereas TBT inhibited BaP bioactivation via a time-dependent modulation of P4501A induction, BaP stimulated the Phase II metabolism of TBT and/or its biliary excretion. The mutual metabolic interactions between these two widespread aquatic pollutants reinforce the need for long-term *in vivo* interactive studies at low doses.

L9 ANSWER 3 OF 7 PASCAL COPYRIGHT 2006 INIST-CNRS. ALL RIGHTS RESERVED. on

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ACCESSION NUMBER: 2001-0229693 PASCAL

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TITLE (IN ENGLISH): Toxic effects of chromium acetate hydroxide on cells cultivated *in vitro*

AUTHOR: RUDOLF Emil; PEYCHL Jan; CERVINKA Miroslav

CORPORATE SOURCE: Department of Medical Biology and Genetics, Charles University in Prague, Faculty of Medicine in Hradec Kralove, Simkova 870, Hradec Kralove I 500, Czech Republic

SOURCE: ATLA. Alternatives to laboratory animals, (2001), 29(2), 163-177, 20 refs.

ISSN: 0261-1929

DOCUMENT TYPE: Journal

BIBLIOGRAPHIC LEVEL: Analytic

COUNTRY: United Kingdom

LANGUAGE: English

AVAILABILITY: INIST-22450, 354000095048960050

AN 2001-0229693 PASCAL

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AB Many human activities, particularly industrial ones, result in an ever-growing production of toxic waste materials. The dynamics of the toxic effects of chromium acetate hydroxide, which is found in high concentrations in a waste sediment produced in the Czech Republic, were assessed by using a battery of *in vitro* tests carried out on two cell lines: L-929 (mouse fibroblasts) and Hep 2 (human laryngeal cells). Various markers of cell damage were assessed by phase-contrast, video and fluorescence microscopy, fluorometry, and DNA analysis. Chromium acetate hydroxide, over a concentration range of 1-0.02mol/l induced immediate cell death by fixation, whereas, at 0.002mol/l, the treated cells died in a much slower, more discrete manner. All the detected markers of cell damage, whether immediate or slow, clearly demonstrated that the cells died by necrosis. On the other hand, test concentration of 0.001 mol/l appeared to constitute a threshold at which no pathological changes of Hep 2 cells were observed over 96 hours. We

conclude that chromium acetate hydroxide has a high toxic potential in vitro, which should be considered when studying the toxicity of waste materials containing it.

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ACCESSION NUMBER: 2002-0125591 PASCAL

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TITLE (IN ENGLISH): In vitro suppression of thymocyte apoptosis by metal-rich complex environmental mixtures: potential role of zinc and cadmium excess

AUTHOR: CHUKHLOVIN Alexei B.; TOKALOV Sergei V.; YAGUNOV Alexei S.; WESTENDORF Johannes; REINCKE Heinrich; KARBE Ludwig

CORPORATE SOURCE: Center of Hematology, St. Petersburg State Medical University, 6/8 L. Tolstoy St., St. Petersburg 187022, Russian Federation; Central Research Institute of Roentgenology and Radiology, Pesochny-2, 189646, St. Petersburg, Russian Federation; Institute of Experimental and Clinical Pharmacology and Toxicology, University of Hamburg, Vogt-Koelln ST. 30, 22527, Hamburg, Germany, Federal Republic of; Elbe River Water Quality Board, Nessdeich 120-121, 21129, Hamburg, Germany, Federal Republic of; Institute of Hydrobiology and Fisheries Science, University of Hamburg, Zeiseweg 9, 22765, Hamburg, Germany, Federal Republic of

SOURCE: Science of the total environment, (2001), 281(1-3), 153-163, refs. 1 p.1/4  
ISSN: 0048-9697 CODEN: STENDL

DOCUMENT TYPE: Journal

BIBLIOGRAPHIC LEVEL: Analytic

COUNTRY: Ireland

LANGUAGE: English

AVAILABILITY: INIST-15662, 354000103409260120

AN 2002-0125591 PASCAL

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AB Excessive amounts of heavy metals (e.g. Zn, Cu, Mn, Cr) are accumulated in river bottom sediments (RBS), being available to humans and animals along food chains. Increased exposure of mammals to certain metals (Cr, Cu) induces immunosuppression, due to DNA damage and decreased survival of lymphoid cells. By contrast, excess of Zn and Cd causes inhibition of apoptosis thus suggesting increased survival of genetically mutated cells and higher cancer risks in exposed

populations. Rat thymic lymphocytes represent a well-established model for apoptosis testing. The primary goal of our study was to assess the degree of apoptosis modulation with a number of RBS extracts differing in their metal contents. A series of freshly deposited RBS was collected at nine sampling stations along the Elbe River. All sediments were rich in Fe, Mn and Zn. The contents of Cu, Cr, Ni, Cd, Hg, Pb and As were much lower and interrelated. The short-term cytotoxicity of aqueous sediment extracts was assessed, using the following criteria: total cell counts; incidence of apoptosis and necrosis (morphological detection by fluorescent microscopy); and nuclear chromatin decay (by DNA flow cytometry). RBS extracts produced both apoptosis and necrosis of thymocytes. High contents of zinc and other heavy metals in the samples correlated with decreased thymocyte apoptosis ( $r = -0.543$  to  $-0.608$ ,  $P < 0.01$ ). The rates of thymocyte damage showed a distinct dependence on the time and region of sampling. Apoptosis modulation was also tested with pure salts of Mn(II), Zn(II), Cu(II), Cr(III) and Cd(II), at the test concentrations of 1, 10 and 100  $\mu\text{M}$ . Cu(II) and Cr(III) proved to induce marked dose-related apoptosis whereas Zn(II) ions caused significant suppression of apoptosis. These effects were similar to those trends observed with metal-rich sediments. In the present study, DNA flow cytometry proved to be a less sensitive index of cell death than morphological assay of apoptosis and/or necrosis. In summary, inhibition of lymphocyte apoptosis by RBS extracts and pure metals is associated with excess of zinc and, probably, cadmium. The proposed model of lymphoid cell apoptosis is a promising tool for screening cytotoxic effects of complex environmental samples.

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STN

ACCESSION NUMBER: 2002-0131007 PASCAL

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TITLE (IN ENGLISH): Current bioremediation practice and perspective

AUTHOR: IWAMOTO Tomotada; NASU Masao

CORPORATE SOURCE: Department of Bacteriology, Kobe Institute of Health, 4-6 Minatojima-nakamachi, Chuo-ku, Kobe 650-0046, Japan; Environmental Science and Microbiology, Graduate School of Pharmaceutical Sciences, Osaka University, 1-6 Yamada-oka, Suita, Osaka 565-0871, Japan

SOURCE: Journal of bioscience and bioengineering, (2001), 92(1), 1-8, 83 refs.  
ISSN: 1389-1723

DOCUMENT TYPE: Journal

BIBLIOGRAPHIC LEVEL: Analytic

**COUNTRY:** Japan  
**LANGUAGE:** English  
**AVAILABILITY:** INIST-8234, 354000096051070010  
**AN** 2002-0131007 PASCAL  
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**AB** The use of microbes to clean up polluted environments, bioremediation, is a rapidly changing and expanding area of environmental biotechnology. Although bioremediation is a promising approach to improve environmental conditions, our limited understanding of biological contribution to the effect of bioremediation and its impact on the ecosystem has been an obstacle to make the technology more reliable and safer. Providing fundamental data to resolve these issues, i.e., the behavior of the target bacteria directly related to the degradation of contaminants and the changes in microbial communities during bioremediation, has been a challenge for microbiologists since many environmental bacteria cannot yet be cultivated by conventional laboratory techniques. The application of culture-independent molecular biological techniques offers new opportunities to better understand the dynamics of microbial communities. Fluorescence in situ hybridization (FISH), in situ PCR, and quantitative PCR are expected to be powerful tools for bioremediation to detect and enumerate the target bacteria that are directly related to the degradation of contaminants. Nucleic acid based molecular techniques for fingerprinting the 16S ribosomal DNA (rDNA) of bacterial cells, i.e., denaturing gradient gel electrophoresis (DGGE) and terminal restriction fragment length polymorphism (T-RFLP), enable us to monitor the changes in bacterial community in detail. Such advanced molecular microbiological techniques will provide new insights into bioremediation in terms of process optimization, validation, and the impact on the ecosystem, which are indispensable data to make the technology reliable and safe.

**L9 ANSWER 6 OF 7 BIOTECHNO COPYRIGHT 2006 Elsevier Science B.V. on STN**

**ACCESSION NUMBER:** 2000:30944926 BIOTECHNO  
**TITLE:** Transgenic zebrafish as sentinels for aquatic pollution  
**AUTHOR:** Carvan III M.J.; Dalton T.P.; Stuart G.W.; Nebert D.W.  
**CORPORATE SOURCE:** D.W. Nebert, Department of Environmental Health, Univ. of Cincinnati Medical Center, P.O. Box 670056, Cincinnati, OH 45267-0056, United States.  
E-mail: dan.nebert@uc.edu  
**SOURCE:** Annals of the New York Academy of Sciences, (2000), 919/- (133-147), 56 reference(s)  
CODEN: ANYAA0 ISSN: 0077-8923  
**DOCUMENT TYPE:** Journal; Conference Article  
**COUNTRY:** United States

LANGUAGE: English

SUMMARY LANGUAGE: English

AN 2000:30944926 BIOTECHNO

AB Using the golden mutant zebrafish having a decrease in interfering pigmentation, we are developing transgenic lines in which DNA motifs that respond to selected environmental pollutants are capable of activating a reporter gene that can be easily assayed. We have begun with three response elements that recognize three important classes of foreign chemicals. Aromatic hydrocarbon response elements (AHREs) respond to numerous polycyclic hydrocarbons and halogenated coplanar molecules such as 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD; dioxin) and polychlorinated biphenyls. Electrophile response elements (EPREs) respond to quinones and numerous other potent electrophilic oxidants. Metal response elements (MREs) respond to heavy metal cations such as mercury, copper, nickel, cadmium, and zinc. Soon, we will include estrogen response elements (EREs) to detect the effects of environmental endocrine disruptors, and retinoic acid response elements (RARE, RXRE) to detect the effects of retinoids in the environment. Each of these substances is known to be bioconcentrated in fish to varying degrees; for example, 10<sup>-7</sup> M TCDD in a body of water becomes concentrated to approximately 10<sup>-2</sup> M TCDD in a fish, where it would act upon the AHRE motif and turn on the luciferase (LUC) reporter gene. The living fish as a sentinel will not only be assayed intact in the luminometer, but - upon several days or weeks of depuration - would be usable again. To date, we have established that zebrafish transcription factors are able to recognize both mammalian and trout AHRE, EPRE, and MRE sequences in a dose-dependent and chemical-class-specific manner, and that expression of both the LUC and jellyfish green fluorescent protein (GFP) reporter genes is easily detected in zebrafish cell cultures and in the intact live zebrafish. Variations in sensitivity of this model system can be achieved by increasing the copy number of response elements and perhaps by altering the sequence of each core consensus response element and flanking regions. This transgenic technology should allow for a simple, exquisitely sensitive, and inexpensive assay for monitoring aquatic pollution. We have already initiated studies using sentinel zebrafish to monitor a public drinking water source.

L9 ANSWER 7 OF 7 PASCAL COPYRIGHT 2006 INIST-CNRS. ALL RIGHTS RESERVED. on

STN

ACCESSION NUMBER: 1998-0538295 PASCAL

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TITLE (IN ENGLISH): Disruption of microtubule assembly and spindle formation as a mechanism for the induction of

aneuploid cells by sodium arsenite and vanadium pentoxide

AUTHOR: RAMREZ P.; EASTMOND D. A.; LACLETTE J. P.; OSTROSKY

WEGMAN P.

CORPORATE SOURCE: 04510 Mexico, DF, Mexico; 04510 Mexico, DF, Mexico; Riverside, CA 92521, United States

SOURCE: Mutation research. Reviews in mutation research, (1997), 386(3), 291-298  
ISSN: 1383-5742

DOCUMENT TYPE: Journal

BIBLIOGRAPHIC LEVEL: Analytic

COUNTRY: Netherlands

LANGUAGE: English

SUMMARY LANGUAGE: English

AVAILABILITY: INIST-12206F, 354000071625070020

AN 1998-0538295 PASCAL

CP Copyright .COPYRGT. 1998 Elsevier Science B.V. All rights reserved.

AB Copyright (c) 1997 Elsevier Science B.V. All rights reserved. Arsenic and vanadium are important environmental and industrial pollutants. Due to their widespread occurrence and potential genotoxicity, we studied the aneuploidy-inducing effects of these elements in cultured human lymphocytes using a variety of techniques including fluorescence in situ hybridization (FISH) with DNA probes for chromosomes 1 and 7, immunostaining of the lymphocyte spindle apparatus, and an in vitro assay measuring the polymerization and depolymerization of tubulin. Dose-related increases in hyperdiploidy were seen in lymphocyte cultures treated with sodium arsenite (NaAsO<sub>2</sub>) or vanadium pentoxide (V<sub>2</sub>O<sub>5</sub>) over concentrations ranging from 0.001 to 0.1  $\mu$ M. NaAsO<sub>2</sub>-treated cells from different donors exhibited similar hyperdiploid frequencies, whereas substantial inter-individual variability was seen in the V<sub>2</sub>O<sub>5</sub>-treated cells. Examination of the spindle apparatus using an anti- $\beta$ -tubulin antibody indicated that these compounds might disrupt spindle formation by interacting with microtubules. Additional in vitro assays using purified tubulin indicated that both compounds inhibited microtubule assembly and induced tubulin depolymerization. These results indicate that in vitro exposure to both NaAsO<sub>2</sub> and V<sub>2</sub>O<sub>5</sub> can induce aneuploidy in human lymphocytes, and that this effect may occur through a disruption of microtubule function.

=> (DNA or nucleic)(12A)(mercury or cd or Hg or pb or cu or copper)(fluorescence or fluorescent)

MISSING OPERATOR COPPER)(FLUORESCEN

The search profile that was entered contains terms or



nested terms that are not separated by a logical operator.

=> (DNA or nucleic)(12A)(mercury or cd or Hg or pb or cu or copper)(10A)(fluorescence or fluorescent)

L10 6 FILE AGRICOLA  
L11 35 FILE BIOTECHNO  
L12 0 FILE CONFSCI  
L13 0 FILE HEALSAFE  
L14 0 FILE IMSDRUGCONF  
L15 26 FILE LIFESCI  
L16 21 FILE PASCAL

TOTAL FOR ALL FILES

L17 88 (DNA OR NUCLEIC)(12A)(MERCURY OR CD OR HG OR PB OR CU OR COPPER)  
(10A)(FLUORESCENCE OR FLUORESCENT)

=> 177 and (dissociate or dissociation)

L77 NOT FOUND

The L-number entered could not be found. To see the definition of L-numbers, enter DISPLAY HISTORY at an arrow prompt (=>).

=> 117 and (dissociate or dissociation)

L18 0 FILE AGRICOLA  
L19 3 FILE BIOTECHNO  
L20 0 FILE CONFSCI  
L21 0 FILE HEALSAFE  
L22 0 FILE IMSDRUGCONF  
L23 0 FILE LIFESCI  
L24 0 FILE PASCAL

TOTAL FOR ALL FILES

L25 3 L17 AND (DISSOCIATE OR DISSOCIATION)

=> dup rem

ENTER L# LIST OR (END):l25

DUPLICATE IS NOT AVAILABLE IN 'IMSDRUGCONF'.

ANSWERS FROM THESE FILES WILL BE CONSIDERED UNIQUE  
PROCESSING COMPLETED FOR L25

L26 2 DUP REM L25 (1 DUPLICATE REMOVED)

=> d l26 ibib abs total

L26 ANSWER 1 OF 2 BIOTECHNO COPYRIGHT 2006 Elsevier Science B.V. on  
STN

DUPLICATE

ACCESSION NUMBER: 2001:32249450 BIOTECHNO  
TITLE: Caffeine dissociates complexes between DNA  
and intercalating dyes: Application for bleaching  
fluorochrome-stained cells for their subsequent  
restaining and analysis by laser scanning cytometry  
AUTHOR: Bedner E.; Du L.; Traganos F.; Darzynkiewicz Z.  
CORPORATE SOURCE: Dr. Z. Darzynkiewicz, Brander Cancer Research  
Institute, New York Medical College, 19 Bradhurst  
Avenue, Hawthorne, NY 10523, United States.  
E-mail: darzynk@nymc.edu  
SOURCE: Cytometry, (01 JAN 2001), 43/1 (38-45), 26  
reference(s)  
CODEN: CYTODQ ISSN: 0196-4763

DOCUMENT TYPE: Journal; Article

COUNTRY: United States

LANGUAGE: English

SUMMARY LANGUAGE: English

AN 2001:32249450 BIOTECHNO

**AB** Background: Removal of the nucleic acid-bound fluorochrome is desirable when stained cells have to be reanalyzed using other fluorochromes. It is also often desirable to remove DNA-bound antitumor drugs from drug-treated cells, to improve cell staining. We have previously observed that in aqueous solutions, the methylxanthine caffeine (CFN) decreases interactions between planar aromatic molecules such as intercalating dyes or antitumor drugs and nucleic acids. The aim of this study was to explore whether this property of CFN can be utilized to remove the DNA-bound intercalating dyes propidium iodide (PI) or 7-aminoactinomycin D (7-AAD) from the cells and whether the bleached cells can be restained and reanalyzed. Methods: HL-60 cells were fixed in 70% ethanol and their DNA was stained with PI or 7-AAD. The cells were then rinsed with a 0.05 M solution of CFN in phosphate-buffered saline (PBS) or with PBS alone. The decrease in intensity of cell fluorescence during rinsing was measured by laser scanning cytometry (LSC) to obtain the bleaching kinetics of individual cells. The bleached cells were then restained with PI, 7-AAD, or the protein-specific fluorochrome sulforhodamine 101(S101). Their fluorescence was measured again by LSC. In addition, free DNA was subjected to gel electrophoresis, DNA bands in the gels were stained with ethidium bromide (EB), and the gels were rinsed with a solution of CFN or PBS to bleach the DNA band's fluorescence. Results: Rinsing the PI or 7-AAD-stained cells with solutions of CFN led to nearly complete removal of PI and a more than 75% decrease in 7-AAD fluorescence after 10 min. The rinse with PBS decreased the PI cell fluorescence intensity by less than 30% and the 7-AAD fluorescence by about 50%. The differences in kinetics of PI or 7-AAD removal by CFN from G.sub.2/M versus G.sub.1 cells suggest that these intercalators bind more strongly to DNA in chromatin of G.sub.2/M than G.sub.1 cells. The

CFN-bleached cells were then successfully stained with S101 and again with PI or 7-AAD. The bivariate analysis of the LSC merged files of the cells sequentially stained with PI and S101 revealed typical DNA/protein distributions. The fluorescence of EB-stained DNA bands in gels was also nearly completely removed by rinsing gels in 0.05 M CFN; PBS alone had a distinctly lesser effect. Conclusion: Solutions of CFN can dissociate the DNA-bound PI, 7-AAD, EB, and possibly other intercalating fluorochromes. The bleached cells can be restained and reanalyzed by LSC. This approach can also be used to remove such fluorochromes from nucleic acids immobilized in gels and perhaps in other solid matrices. Analysis of the kinetics of fluorochrome removal from cells can possibly be used to study their binding affinities to nucleic acids in situ. .COPYRGT. 2001 Wiley-Liss, Inc.

L26 ANSWER 2 OF 2 BIOTECHNO COPYRIGHT 2006 Elsevier Science B.V. on STN

ACCESSION NUMBER: 1996:26054287 BIOTECHNO

TITLE: Equilibrium dissociation and unfolding of the dimeric human papillomavirus strain-16 E2 DNA-binding domain

AUTHOR: Mok Y.-K.; De Prat Gay G.; Butler P.J.; Bycroft M.

CORPORATE SOURCE: MRC Unit for Protein Function/Design, Department of Chemistry, University of Cambridge, Lensfield Road, Cambridge CB2 1EW, United Kingdom.

SOURCE: Protein Science, (1996), 5/2 (310-319)

CODEN: PRCIEI ISSN: 0961-8368

DOCUMENT TYPE: Journal; Article

COUNTRY: United States

LANGUAGE: English

SUMMARY LANGUAGE: English

AN 1996:26054287 BIOTECHNO

AB The equilibrium unfolding reaction of the C-terminal 80-amino-acid dimeric DNA-binding domain of human papillomavirus (HPV) strain 16 E2 protein has been investigated using fluorescence, far-UV CD, and equilibrium sedimentation. The stability of the HPV-16 E2 DNA-binding domain is concentration-dependent, and the unfolding reaction is well described as a two-state transition from folded dimer to unfolded monomer. The conformational stability of the protein, .DELTA.G(H.sub.2O), was found to be 9.8 kcal/mol at pH 5.6, with the corresponding equilibrium unfolding/dissociation constant,  $K(u)$ , being  $6.5 \times 10^{sup.-sup.8}$  M. Equilibrium sedimentation experiments give a  $K(d)$  of  $3.0 \times 10^{sup.-sup.8}$  M, showing an excellent agreement between the two different techniques. Denaturation by temperature followed by the change in ellipticity also shows a concomitant disappearance of secondary and tertiary structures. The  $K(u)$  changes dramatically at physiologically relevant pH's: with a change in pH from

6.1 to 7.0, it goes from  $5.5 \times 10^{-8}$  M to  $4.4 \times 10^{-10}$  M. Our results suggest that, at the very low concentration of protein where DNA binding is normally measured (e.g.,  $10^{-10}$  M), the protein is predominantly monomeric and unfolded. They also stress the importance of the coupling between folding and DNA binding.

=> (toxicity or toxicant) and (heavy metal) and (fluorescence or fluorescent)

L27	10 FILE AGRICOLA
L28	17 FILE BIOTECHNO
L29	0 FILE CONFSCI
L30	10 FILE HEALSAFE
L31	0 FILE IMSDRUGCONF
L32	68 FILE LIFESCI
L33	253 FILE PASCAL

TOTAL FOR ALL FILES

L34	358 (TOXICITY OR TOXICANT) AND (HEAVY METAL) AND (FLUORESCENCE OR FLUORESCENT)
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=> l34 and (DNA or nucleic)

L35	0 FILE AGRICOLA
L36	4 FILE BIOTECHNO
L37	0 FILE CONFSCI
L38	1 FILE HEALSAFE
L39	0 FILE IMSDRUGCONF
L40	6 FILE LIFESCI
L41	22 FILE PASCAL

TOTAL FOR ALL FILES

L42	33 L34 AND (DNA OR NUCLEIC)
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=> dup rem

ENTER L# LIST OR (END):l42

DUPLICATE IS NOT AVAILABLE IN 'IMSDRUGCONF'.

ANSWERS FROM THESE FILES WILL BE CONSIDERED UNIQUE  
PROCESSING COMPLETED FOR L42

L43	29 DUP REM L42 (4 DUPLICATES REMOVED)
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=> l43 and py<2001

L44	0 S L43
L45	0 FILE AGRICOLA
L46	4 S L43
L47	1 FILE BIOTECHNO
L48	0 S L43

'2001' NOT A VALID FIELD CODE

L49 0 FILE CONFSCI  
L50 1 S L43  
L51 0 FILE HEALSAFE  
L52 0 S L43  
L53 0 FILE IMSDRUGCONF  
L54 4 S L43  
L55 3 FILE LIFESCI  
L56 20 S L43  
L57 9 FILE PASCAL

TOTAL FOR ALL FILES

L58 13 L43 AND PY<2001

=>

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=>

=>

=>

=> exit

ALL L# QUERIES AND ANSWER SETS ARE DELETED AT LOGOFF  
LOGOFF? (Y)/N/HOLD:n

=> d l58 ibib abs total

L58 ANSWER 1 OF 13 BIOTECHNO COPYRIGHT 2006 Elsevier Science B.V. on  
STN

ACCESSION NUMBER: 1999:29389688 BIOTECHNO

TITLE: The chromosome-based challenge assay using  
fluorescence in situ hybridization: A possible  
test for increased cancer susceptibility

AUTHOR: Oberheitmann B.; Schafer J.; Dally H.; Garms A.;  
Frentzel-Beyme R.; Hoffmann W.

CORPORATE SOURCE: B. Oberheitmann, UFT-Zentrum für Umweltforschung,  
Umwelttechnologie, Universität Bremen, D-28334 Bremen,  
Germany.

E-mail: boris.oberheitmann@uni-bremen.de

SOURCE: Mutation Research - Fundamental and Molecular  
Mechanisms of Mutagenesis, (1999), 428/1-2  
(157-164), 26 reference(s)

CODEN: MRFMEC ISSN: 0027-5107  
PUBLISHER ITEM IDENT.: S1383574299000435  
DOCUMENT TYPE: Journal; Conference Article  
COUNTRY: Netherlands  
LANGUAGE: English  
SUMMARY LANGUAGE: English  
AN 1999:29389688 BIOTECHNO

**AB** The challenge assay is a cytogenetic approach to measure the repair competence of cells. For in vitro studies, human lymphocytes are exposed to different substances and are irradiated simultaneously. To investigate subjects exposed occupationally or environmentally, untreated blood samples are directly irradiated without any further treatment. Certain substances like heavy metals reveal carcinogenic potential without well defined mechanism of action. While they are not mutagenic they may have an effect on DNA repair capacity. The challenge assay was successfully applied in vitro experiments with cadmium to detect an interaction of this heavy metal with the repair of X-ray-induced chromosome breaks. CdCl<sub>2</sub> alone had no effect on the formation of chromosome aberrations (CA), not even in the cytotoxic concentration (50  $\mu$ M). However, cadmium showed an effect on the number of chromosomal rearrangements (CR) after X-ray challenge. For 0.5  $\mu$ M CdCl<sub>2</sub>, CA frequencies were significantly elevated compared to the rates for X-rays alone. For the two higher concentrations the rates showed a slight additional increase. Hence, the challenge assay appears suitable to test for chromosomal sensitivity induced by toxicants. Subsequently, a study of styrene exposed workers was initiated to address the question whether styrene exposure has an influence on the DNA repair. In addition, we investigated whether a polymorphism of genes coding for phase II detoxifying enzymes glutathione-S-transferases GSTM1 and GSTT1 had an influence on chromosomal sensitivity. First and preliminary data are presented. While there is a correlation of the rate of CR with cumulative lifetime exposure of styrene, the most recent styrene exposure had no effect. 'At risk' genotypes with higher incidence of CA could not be identified at this stage of the ongoing study. Conclusion: the challenge assay is able to detect enhanced susceptibility for CR caused by genetic predisposition for DNA repair deficiency. Our data indicate that environmental or occupational exposure to certain substances can interfere with DNA repair processes. As the process of induction of CR is associated with carcinogenesis, the challenge assay may provide a valuable biomarker for cancer epidemiology studies. Copyright (C) 1999 Elsevier Science B.V.

L58 ANSWER 2 OF 13 LIFESCI COPYRIGHT 2006 CSA on STN  
ACCESSION NUMBER: 2001:10168 LIFESCI  
TITLE: Genetics and marine pollution

AUTHOR: Dixon, D.R.; Wilson, J.T.  
CORPORATE SOURCE: Southampton Oceanography Centre, Empress Dock,  
Southampton  
SO14 3ZH, U.K.  
SOURCE: Hydrobiologia, (20000200) vol. 420, no. 1, pp.  
29-43.  
ISSN: 0018-8158.  
DOCUMENT TYPE: Journal  
FILE SEGMENT: X; Q4; G  
LANGUAGE: English  
SUMMARY LANGUAGE: English

AB The development of cytogenetic methods applied to cells and tissues of marine invertebrates has been hampered by (1) a lack of in vitro cell lines, (2) inadequate karyotypic information (partly as a result of too few workers chasing too many organisms), and (3) the failure of their chromosomes to band satisfactorily. Compared to mammalian cytogenetics, our knowledge of marine invertebrates lags behind by several decades. With the current concern about mutagens in the marine environment, and the recognition that the cells of marine species have sensitivities to DNA-damaging agents similar to those of higher organisms, there is a need for methods which can be used (a) in environmental monitoring and (b) to screen potentially harmful substances in the laboratory. In the absence of in vitro cell lines, embryos and larvae have been used to provide a supply of dividing cells for mutation studies, although the advent of molecular methods has now brought with it the means to detect DNA damage without any need for the cells to be in a dividing state. Moreover, the use of FISH (Fluorescence In Situ Hybridisation) now makes it possible to study numerical and structural chromosomal aberrations with far greater accuracy than was previously possible. A new marine genotoxicity assay is described, based on the embryos and larvae of a tube-dwelling polychaete worm (*Pomatoceros lamarkii*), suitable for both laboratory studies and field monitoring. This new *Pomatoceros* assay provides, at the same time, a useful model for studying the consequences of adult exposure on the offspring. A novel application of marine cytogenetic research is the study of the evolutionary adaptations of invertebrates living in naturally polluted extreme environments viz. deep sea hydrothermal vents, which are typified by high levels of toxic heavy metals and radionuclides, substances known to inflict damage to DNA. Given these new methodological and conceptual advances, it is predicted that our understanding of the role played by mutation in the marine environment, both in an evolutionary and toxicological context, will increase dramatically over the next decade.

L58 ANSWER 3 OF 13 LIFESCI COPYRIGHT 2006 CSA on STN  
ACCESSION NUMBER: 2000:13275 LIFESCI

**TITLE:** Selective induction of apoptosis of renal proximal tubular cells caused by inorganic mercury in vivo  
**AUTHOR:** Homma-Takeda, S.; Takenaka, Y.; Kumagai, Y.; Shimojo, N.  
**CORPORATE SOURCE:** Graduate School Doctoral Program in Medical Sciences, University of Tsukuba, 1-1-1 Tennodai, Tsukuba, Ibaraki 305-8575, Japan; E-mail: mk99d165@md.tsukuba.ac.jp  
**SOURCE:** Environmental Toxicology and Pharmacology [Environ. Toxicol. Pharmacol.], (19990700) vol. 7, no. 3, pp. 179-187.  
ISSN: 1382-6689.

**DOCUMENT TYPE:** Journal

**FILE SEGMENT:** X

**LANGUAGE:** English

**SUMMARY LANGUAGE:** English

**AB** A recent notion, that a variety of toxicants causing necrosis can lead to apoptosis as well, has been demonstrated with cultured cells, but not with in an vivo system. In the present study, we examined the induction of both apoptosis and necrosis in the kidneys of Wistar rats exposed to mercuric chloride (HgCl sub(2)). A single injection of HgCl sub(2) to rats at a dose of 4 mg/kg resulted in an increase in the renal DNA fragmentation evaluated as an occurrence of apoptosis, prior to urinary excretion of alkaline phosphatase (ALP) and renal morphological changes assessed as necrotic phenomena. The mercury-promoted DNA fragmentation was induced in a dose-dependent manner. Terminal deoxynucleotidyl transferase-mediated dUTP nick end-labeling (TUNEL) staining and morphological observation of the nuclei revealed that apoptotic cells caused by HgCl sub(2) were predominantly found in the proximal tubules, but not in the distal tubules, glomeruli or medullary tubules. When we confirmed the proximal tubular-selective apoptosis by inorganic mercury with a combined technique of TUNEL staining with synchrotron radiation X-ray fluorescence (SR-XRF) imaging, it was shown that the apoptotic cells localized in the proximal tubules did contain higher level of mercury. Thus these results indicate that the proximal tubular cells-dominant site-specific distribution of mercury appears to be associated with induction of renal apoptosis and necrosis.

L58 ANSWER 4 OF 13 LIFESCI COPYRIGHT 2006 CSA on STN

ACCESSION NUMBER: 1999:55882 LIFESCI

**TITLE:** An application of bacterial flow cytometry: Evaluation of the toxic effects of four heavy metals on Acinetobacter sp. with potential for bioremediation of contaminated wastewaters

**AUTHOR:** Boswell, C.D.; Hewitt, C.J.; Macaskie, L.E. \*

**CORPORATE SOURCE:** School of Biological Sciences, The University of Birmingham, Edgbaston, B15 2TT, UK

**SOURCE:** Biotechnology Letters [Biotechnol. Lett.], (



19980900) vol. 20, no. 9, pp. 857-863.

ISSN: 0141-5492.

DOCUMENT TYPE: Journal

FILE SEGMENT: W2; X; A

LANGUAGE: English

SUMMARY LANGUAGE: English

AB *Acinetobacter johnsonii* has potential use in the remediation of heavy metal-contaminated wastewaters. For metal accumulation, cells must remain intact and metabolically active. The effect of possible accumulation targets, Cd super(2+), UO sub(2) super(2+), Cu super(2+), and Ni super(2+) on cytoplasmic membrane integrity and polarity was investigated by flow cytometry using a mixture of two fluorescent dyes, propidium iodide and bis-oxonol. The former binds to DNA but cannot cross an intact cytoplasmic membrane, whilst the latter is anionic, lipophilic and stains depolarized cytoplasmic membranes. All four metals permeabilized the cytoplasmic membrane of some cells during the period of exposure. The effects of the metals differed in that Cu super(2+) and Cd super(2+) also generated an intermediate population of cells, having intact but depolarized cytoplasmic membranes. Electron microscopy showed corresponding cellular abnormalities following metal exposure.

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on STN

ACCESSION NUMBER: 2000-0489207 PASCAL

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TITLE (IN ENGLISH): Lead nitrate induced apoptosis in alveolar macrophages from rat lung

AUTHOR: SHABANI A.; RABBANI A.

CORPORATE SOURCE: Institute of Biochemistry and Biophysics, University of Tehran, P.O. Box 13145-1384, Tehran, Iran (Islamic Republic of)

SOURCE: Toxicology : (Amsterdam), (2000), 149(2-3), 109-114, 26 refs.

ISSN: 0300-483X CODEN: TXICDD

DOCUMENT TYPE: Journal

BIBLIOGRAPHIC LEVEL: Analytic

COUNTRY: Ireland

LANGUAGE: English

AVAILABILITY: INIST-15984, 354000091902820070

AN 2000-0489207 PASCAL

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AB In this work we have attempted to characterize the programmed cell death (apoptosis) in alveolar macrophages exposed to various concentrations of

lead nitrate. It was found that after 3 h of exposure a significant increase in superoxide anion production was observed, i.e. the number of trypan blue exculding cells, was unchanged ( < 95%) with any dose of lead employed. Agarose gel electrophoresis and diphenylamin reaction analysis revealed the occurrence of internucleosomal DNA fragmentation evaluated using cytological analysis by fluorescence dyes, suggesting that lead nitrate at low concentrations and short periods of exposure leads macrophages into apoptosis. However, time course studies showed that beyond 3 h, toxicity occurs, which could be attenuated by phosphodiesterase inhibitors, such as caffeine, suggesting a possible mechanism involving cAMP.

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on STN

ACCESSION NUMBER: 1999-0279644 PASCAL

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TITLE (IN ENGLISH): DNA damage and repair in yeast  
(*Saccharomyces cerevisiae*) cells exposed to lead

AUTHOR: XIAOFAN YUAN; CHIACHUN TANG

CORPORATE SOURCE: Research Center for Eco-Environmental Sciences,  
Chinese Academy of Sciences, P.O. Box 2871, Beijing,  
100085, China

SOURCE: Journal of environmental science and health. Part A,  
Environmental science and engineering, (1999)  
, 34(5), 1117-1128, refs. 1 p.1/2  
ISSN: 0360-1226 CODEN: JESEDU

DOCUMENT TYPE: Journal

BIBLIOGRAPHIC LEVEL: Analytic

COUNTRY: United States

LANGUAGE: English

AVAILABILITY: INIST-15710A, 354000084151020070

AN 1999-0279644 PASCAL

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AB The DNA damage and repair effects of yeast (*Saccharomyces cerevisiae*) cells induced by lead (Pb) were tested in this study. Yeast cells were cultured for 72 h at the following Pb concentrations : 0 (controls), 1 ppm (11.6 .mu.g/dl) and 8 ppm (92.6 .mu.g/dl), and 0.1 g kappa-selenocarrageenan (10000 .mu.g Se/g) used as repair reagent was added directly to the yeast culture medium (100 ml ) for the repair assays. The percentage of damaged cells was observed from fluorescence microscope. Statistical analysis showed that the two lead doses damaged DNA structure of yeast cells significantly, and the higher concentration made more serious damage than that of the lower concentration. With the addition of kappa-selenocarrageenan,

DNA damage was repaired to some degree. Furthermore, the accumulation effects of DNA damage from the parent generation to the filial generation yeast cells was also investigated. At the lower lead concentration, the accumulation effects were more significant than that at the higher concentration.

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on STN

ACCESSION NUMBER: 1999-0279219 PASCAL

COPYRIGHT NOTICE: Copyright .COPYRGT. 1999 INIST-CNRS. All rights reserved.

TITLE (IN ENGLISH): Characterization of cadmium-induced apoptosis in rat lung epithelial cells : evidence for the participation of oxidant stress

AUTHOR: HART B. A.; LEE C. H.; SHUKLA G. S.; SHUKLA A.; OSIER M.; ENEMAN J. D.; CHIU J.-F.

CORPORATE SOURCE: Department of Biochemistry, University of Vermont College of Medicine, Burlington, VT 05405-0068, United States

SOURCE: Toxicology : (Amsterdam), (1999), 133(1), 43-58, refs. 1 p.1/4

ISSN: 0300-483X CODEN: TXICDD

DOCUMENT TYPE: Journal

BIBLIOGRAPHIC LEVEL: Analytic

COUNTRY: Ireland

LANGUAGE: English

AVAILABILITY: INIST-15984, 354000084346650030

AN 1999-0279219 PASCAL

CP Copyright .COPYRGT. 1999 INIST-CNRS. All rights reserved.

AB The mode of cadmium-induced cell death was investigated in a rat lung epithelial cell line. Cells, grown to near confluence, were exposed to 0-30  $\mu$ M CdCl<sub>2</sub> for 0-72 h. Phase contrast microscopy and fluorescent nuclear staining showed that Cd caused morphological alterations in lung epithelial cells that are characteristic of apoptosis. These changes included cell shrinkage, detachment of the cell from its neighbors, cytoplasmic and chromatin condensation, and fragmentation of the nucleus into multiple chromatin bodies surrounded by remnants of the nuclear envelope. Apoptotic DNA degradation was validated and quantitated using a sensitive enzyme-linked immunosorbent assay (ELISA) which measures the amount of histone-bound DNA fragments in the cytosol. Using this technique, a maximum level of apoptosis (5-fold higher than control) was observed in cultures exposed for 48 h to 20  $\mu$ M CdCl<sub>2</sub>. The terminal deoxyribonucleotidyl transferase mediated dUTP nick end labeling method (TUNEL) was subsequently used to determine the percentage of cells that contained

Cd-induced DNA strand breaks. After 48 h, approximately 54% of the cells exposed to 20 .mu.M Cd were TUNEL positive compared to less than 2% for control cells. Although the mechanisms by which Cd initiates apoptosis in these cells are presently not known, reactive oxygen species are likely to play a role. This possibility is supported by the finding that the first morphological features indicative of apoptosis were preceded by the up-regulation of oxidant stress genes (glutathione S-transferase-a, y-glutamylcysteine synthetase, and metallothionein-1), activation of redox sensitive transcription factors (AP-I and NF-KB), and changes in various forms of glutathione (reduced, oxidized, and protein-bound).

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on STN

ACCESSION NUMBER: 1999-0128304 PASCAL

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TITLE (IN ENGLISH): Mercuric chloride induces apoptosis in human T lymphocytes : Evidence of mitochondrial dysfunction

AUTHOR: TAI LIANG GUO; MILLER M. A.; SHAPIRO I. M.; SHENKER B.

J.

CORPORATE SOURCE: Department of Pathology, University of Pennsylvania School of Dental Medicine, Philadelphia, Pennsylvania 19104, United States; Department of Biochemistry, University of Pennsylvania School of Dental Medicine, Philadelphia, Pennsylvania 19104, United States

SOURCE: Toxicology and applied pharmacology, (1998), 153(2), 250-257, 38 refs.

ISSN: 0041-008X CODEN: TXAPA9

DOCUMENT TYPE: Journal

BIBLIOGRAPHIC LEVEL: Analytic

COUNTRY: United States

LANGUAGE: English

AVAILABILITY: INIST-9067, 354000073523480110

AN 1999-0128304 PASCAL

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AB The major objective of our study was to define the mechanism by which mercuric chloride (HgCl.sub.2) induces human T-cell death. Human peripheral blood T-cells were exposed to 0-40 .mu.M HgCl.sub.2 and then analyzed for biochemical and molecular features of T-cell apoptosis. HgCl.sub.2-treated cells exhibited increased Hoechst 33258 fluorescence while maintaining their ability to exclude the vital stain 7-aminoactinomycin D. To further evaluate cell death and distinguish between apoptosis and necrosis, translocation of

phosphatidyl-serine to the outer layer of the plasma membrane (annexin V binding), DNA fragmentation (TUNEL assay), and cleavage of poly (ADP-ribose) polymerase (PARP) were assessed. In the presence of 20-40  $\mu$ M HgCl<sub>2</sub>, T-cells exhibited increased annexin V binding (28%) and DNA fragmentation (31%). HgCl<sub>2</sub>-dependent PARP cleavage was also observed by Western blot analysis. Because degradative changes associated with apoptosis are often preceded by disruption of mitochondrial function, HgCl<sub>2</sub>-treated cells were assessed for disruption of the mitochondrial transmembrane potential ( $\Delta$ PSI<sub>m) and development of the mitochondrial permeability transition state. Using DiOC<sub>6</sub>(3), we demonstrated that HgCl<sub>2</sub> exposure resulted in a decrease in the  $\Delta$ PSI<sub>m</sub>. Because a decline in  $\Delta$ PSI<sub>m</sub> can disturb the intracellular pH (pH<sub>i</sub>), we used the fluorescent probe, SNARF-1, to assess intracellular acidification. Treatment of T-cells with HgCl<sub>2</sub> resulted in reduced pH<sub>i</sub> from 7.0 to 6.7. Concomitant with these observations, the fluorescent probe, hydroethidine, was utilized to demonstrate that uncoupled mitochondrial electron transport resulted in increased reactive oxygen species (ROS) generation. Interestingly, in spite of these alterations to mitochondrial function, translocation of cytochrome c to the cytosol was not detected; this correlated with enhanced bcl-2 levels in HgCl<sub>2</sub>-treated cells. In conclusion, HgCl<sub>2</sub> exposure results in oxidative stress and activation of death signaling pathways leading to apoptosis. Collectively, our studies indicate that individual mercurial species are capable of inducing T-cell death by activating specific apoptotic cascades.</sub>

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ACCESSION NUMBER: 1998-0538295 PASCAL

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TITLE (IN ENGLISH): Disruption of microtubule assembly and spindle formation as a mechanism for the induction of aneuploid cells by sodium arsenite and vanadium pentoxide

AUTHOR: RAMREZ P.; EASTMOND D. A.; LACLETTE J. P.; OSTROSKY

WEGMAN P.

CORPORATE SOURCE: 04510 Mexico, DF, Mexico; 04510 Mexico, DF, Mexico; Riverside, CA 92521, United States

SOURCE: Mutation research. Reviews in mutation research, (1997), 386(3), 291-298  
ISSN: 1383-5742

DOCUMENT TYPE: Journal  
BIBLIOGRAPHIC LEVEL: Analytic  
COUNTRY: Netherlands  
LANGUAGE: English  
SUMMARY LANGUAGE: English  
AVAILABILITY: INIST-12206F, 354000071625070020  
AN 1998-0538295 PASCAL  
CP Copyright .COPYRGT. 1998 Elsevier Science B.V. All rights reserved.  
AB Copyright (c) 1997 Elsevier Science B.V. All rights reserved. Arsenic and vanadium are important environmental and industrial pollutants. Due to their widespread occurrence and potential genotoxicity, we studied the aneuploidy-inducing effects of these elements in cultured human lymphocytes using a variety of techniques including fluorescence in situ hybridization (FISH) with DNA probes for chromosomes 1 and 7, immunostaining of the lymphocyte spindle apparatus, and an in vitro assay measuring the polymerization and depolymerization of tubulin. Dose-related increases in hyperdiploidy were seen in lymphocyte cultures treated with sodium arsenite (NaAsO<sub>2</sub>) or vanadium pentoxide (V<sub>2</sub>O<sub>5</sub>) over concentrations ranging from 0.001 to 0.1  $\mu$ M. NaAsO<sub>2</sub>-treated cells from different donors exhibited similar hyperdiploid frequencies, whereas substantial inter-individual variability was seen in the V<sub>2</sub>O<sub>5</sub>-treated cells. Examination of the spindle apparatus using an anti- $\beta$ -tubulin antibody indicated that these compounds might disrupt spindle formation by interacting with microtubules. Additional in vitro assays using purified tubulin indicated that both compounds inhibited microtubule assembly and induced tubulin depolymerization. These results indicate that in vitro exposure to both NaAsO<sub>2</sub> and V<sub>2</sub>O<sub>5</sub> can induce aneuploidy in human lymphocytes, and that this effect may occur through a disruption of microtubule function.

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ACCESSION NUMBER: 1998-0212175 PASCAL  
COPYRIGHT NOTICE: Copyright .COPYRGT. 1998 INIST-CNRS. All rights reserved.  
TITLE (IN ENGLISH): Lipopolysaccharide and interleukin-6 enhance lead entry into cerebellar neurons : Application of a new and sensitive flow cytometric technique to measure intracellular lead and calcium concentrations  
AUTHOR: DYATLOV V. A.; DYATLOVA O. M.; PARSONS P. J.; LAWRENCE D. A.; CARPENTER D. O.  
CORPORATE SOURCE: Wadsworth Center for Laboratories and Research, New York State Department of Health, Albany, New York

12201-0509, United States; School of Public Health,  
University at Albany, State University of New York,  
Albany, New York 12201-0509, United States

SOURCE: Neurotoxicology : (Park Forest South), (1998)  
, 19(2), 293-302, refs. 1 p.3/4  
ISSN: 0161-813X

DOCUMENT TYPE: Journal

BIBLIOGRAPHIC LEVEL: Analytic

COUNTRY: United States

LANGUAGE: English

AVAILABILITY: INIST-18397, 354000075125520130

AN 1998-0212175 PASCAL

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AB The distribution of intracellular ionized lead (Pb) and calcium in dissociated cerebellar cells of ten-day-old mice was measured by flow cytometry. There are no fluorescent probes specific for lead, whereas commonly used fluorescent calcium indicators bind heavy metals with greater affinity than they do calcium, which impedes discrimination of lead- and calcium-induced fluorescence changes. Therefore, we developed a method to determine  $[Pb^{2+}]$  and  $[Ca^{2+}]$  by employing a combination of the calcium indicator fluo-3 and the heavy-metal chelator TPEN. Using these methods, we studied the effects of multiple in vivo exposure (five subcutaneous injections over 10 days) to lipopolysaccharide (LPS, 100 ng/g), recombinant mouse interleukin-6 (IL-6, 5 ng/g) and/or inorganic lead (lead, 2.5  $\mu$ g/g) on lead and calcium concentrations. Control cells had  $[Ca^{2+}]$  of 112 nM. Lead exposure alone had little effect on  $[Ca^{2+}]$ , and resulted in a mean  $[Pb^{2+}]$  of about 7 pM, and did not alter cell volume. A significant fraction of cells (about 44% of living cells) from animals treated with lead plus LPS were swollen, as determined by analysis of the light scattering pattern, and there was a small increase in the number of dead cells, identified with the nucleic acid stain, 7-aminoactinomycin. While  $[Ca^{2+}]$  was not significantly increased in animals treated with either only LPS or IL-6, lead and calcium concentrations were increased in animals exposed to lead and LPS or IL-6 in both the non-swollen and swollen cells, with a mean value of  $[Pb^{2+}]$  of 32 pM and  $[Ca^{2+}]$  of 155 nM in cells not swollen. Electrophysiological analysis showed that LPS injections caused decreases in the membrane potential of endothelial cells of the blood-brain barrier (BBB) and lead potentiated the effect of LPS. IL-6 mimicked the effects of LPS, but was less potent. Thus these experiments indicate a synergistic interaction between lead and cytokines on biophysical properties of both neurons and endothelial cells of the BBB.

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ACCESSION NUMBER: 1997-0258024 PASCAL

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TITLE (IN ENGLISH): Induction of apoptosis in human T-cells by organomercuric compounds : A flow cytometric analysis

AUTHOR: SHENKER B. J.; DATAR S.; MANSFIELD K.; SHAPIRO I. M.

CORPORATE SOURCE: Department of Pathology, School of Dental Medicine, University of Pennsylvania, Philadelphia, Pennsylvania 19104, United States; Department of Biochemistry, School of Dental Medicine, University of Pennsylvania, Philadelphia, Pennsylvania 19104, United States

SOURCE: Toxicology and applied pharmacology, (1997), 143(2), 397-406, 34 refs.

ISSN: 0041-008X CODEN: TXAPA9

DOCUMENT TYPE: Journal

BIBLIOGRAPHIC LEVEL: Analytic

COUNTRY: United States

LANGUAGE: English

AVAILABILITY: INIST-9067, 354000064942080160

AN 1997-0258024 PASCAL

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AB Although several lines of investigation demonstrate that many heavy metals are cytotoxic to host defense cells, the mechanism of killing is poorly understood. The major focus of this investigation was to determine if organic mercuric compounds kill human lymphocytes by inducing the cells to undergo apoptosis and to evaluate possible flow cytometric systems for assessing cell death. T-cells were exposed to 0.6-5 .mu.M MeHgCl, EtHgCl, or PhHgCl for up to 24 hr and then analyzed by flow cytometry. Mercury-treated cells exhibited increased Hoechst 33258 and 33342 fluorescence while maintaining their ability to exclude the vital stain 7-AAD. Furthermore, T-cells exposed to mercury exhibited changes in light scatter patterns that included decreased forward light scatter and increased side scatter. The light scatter and fluorescent changes were consistent with changes that cells display during apoptosis. To further evaluate cell death and to distinguish between apoptosis and necrosis, merocyanine 540 staining and annexin V binding to the plasma membrane as well as DNA fragmentation were assessed. Mercury-treated cells exhibited increased merocyanine 540 fluorescence and annexin V binding along with changes in nuclear morphology consistent with the notion of apoptosis. Conventional agarose gel electrophoresis failed to demonstrate low-molecular-weight DNA bands; however, when probed by flow



cytometry using both nick translation and a modified TUNEL assay, patterns consistent with nuclear fragmentation were evident. We noted that the percentage of T-cells undergoing apoptosis was dependent upon the amount of serum present in the medium; as serum concentrations were increased from 0 to 10%, cell death declined. Apoptosis (33%) was observed within 1 hr of exposure to MeHgCl; maximum cell death (67%) occurred after 24 hr exposure. Induction of apoptosis was dependent on the mercury concentration and independent of the hydrophobicity of the mercury ligand. Finally, we assessed mercury-dependent apoptosis in activated T-cells. When treated with mitogen, mercury failed to induce apoptosis in these cells. Indeed, there was no evidence of either apoptosis nor necrosis in these populations. It was concluded that the activation process prevented development of a metabolic state that was required for induction of apoptogenic genes.

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on STN

ACCESSION NUMBER: 1996-0107395 PASCAL

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TITLE (IN ENGLISH): The use of fluorescence in situ hybridization with a .beta.-satellite DNA probe for the detection of acrocentric chromosomes in vanadium-induced micronuclei

AUTHOR: MIGLIORE L.; SCARPATO R.; FALCO P.

CORPORATE SOURCE: Univ. Pisa, dip. sci. ambiente territorio, 56100 Pisa, Italy

SOURCE: Cytogenetics and cell genetics, (1995), 69(3-4), 215-219, 34 refs.

ISSN: 0301-0171 CODEN: CGCGBR

DOCUMENT TYPE: Journal

BIBLIOGRAPHIC LEVEL: Analytic

COUNTRY: Switzerland

LANGUAGE: English

AVAILABILITY: INIST-10561, 354000056004250140

AN 1996-0107395 PASCAL

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AB Vanadium salts have been shown to be aneuploidogenic in human lymphocyte cultures. In particular, increases in the frequency of chromosome satellite associations and a high proportion of induced micronuclei with centromeric signals seem to be connected with chromosome malsegregation mechanisms in which acrocentric chromosomes may be involved. Our aim was to assess the contribution of these chromosomes to the formation of vanadium-induced micronuclei by applying the fluorescence in situ hybridization technique to the human lymphocyte micronucleus assay.

Whole blood cultures were treated after 24 h with 0, 10, 40, and 80  $\mu$ M sodium orthovanadate or vanadyl sulfate and harvested at 72 h ; vinblastine, 20 ng/ml, was used as a reference compound. The slides were then hybridized with biotin-labeled  $\beta$ -satellite DNA probes specific for all human acrocentric chromosomes. After chemical treatment, the percentage of micronuclei with fluorescent signals was found to be statistically higher than that in control cultures, whereas vinblastine induced only a slight increase in micronuclei.

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on STN

ACCESSION NUMBER: 1994-0541219 PASCAL

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TITLE (IN ENGLISH): Molecular mechanisms of nickel carcinogenesis

AUTHOR: COSTA M.; ZHIXIONG ZHUANG; XI HUANG; COSENTINO S.;

KLEIN C. B.; SALNIKOW K.

NIEBOER Evert (ed.); TEMPLETON Douglas M. (ed.)

CORPORATE SOURCE: New York univ. medical cent., nelson inst. environmental medicine, New York NY 10016, United States

McMaster univ., dep. biochemistry, occupational health program, Hamilton ON, Canada

SOURCE: Science of the total environment, (1994), 148(2-3), 191-199, 22 refs.

Conference: 5 Nickel biochemistry, toxicology and ecologic issues. International conference, Sudbury ON (Canada), 7 Sep 1992

ISSN: 0048-9697 CODEN: STENDL

DOCUMENT TYPE: Journal; Conference

BIBLIOGRAPHIC LEVEL: Analytic

COUNTRY: Netherlands

LANGUAGE: English

AVAILABILITY: INIST-15662, 354000045636730090

AN 1994-0541219 PASCAL

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AB Nickel treatment of intact cultured cells oxidized dichlorofluorescein to a fluorescent product indicating that nickel elevated the level of oxidants in cells. Nickel also caused an increase in crosslinking of amino acids to DNA and these complexes did not appear to involve the direct participation of Ni<sup>2+</sup>. Histidine, cysteine and tyrosine were prominent among the amino acids crosslinked to DNA. Nickel selectively damaged heterochromatin and this resulted in deletions of heterochromatic regions during nickel carcinogenesis.

Thrombospondin was one of the genes expressed in normal cells that was not expressed in nickel-transformed cells. Other aspects of the molecular mechanism of nickel carcinogenesis are discussed

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=> mercuric acetate and fluorescent and interaction and DNA

L1	0 FILE AGRICOLA
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L7	0 FILE PASCAL

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L8	5 MERCURIC ACETATE AND FLUORESCENT AND INTERACTION AND DNA
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L9 3 DUP REM L8 (2 DUPLICATES REMOVED)

=> d l9 ibib abs total

L9 ANSWER 1 OF 3 BIOTECHNO COPYRIGHT 2006 Elsevier Science B.V. on STN

DUPLICATE

ACCESSION NUMBER: 2000:30051162 BIOTECHNO  
TITLE: Transcription activation mediated by the  
carboxyl-terminal domain of the RNA polymerase  
 $\alpha$ -subunit. Multipoint monitoring using a  
**fluorescent** probe  
AUTHOR: Ozoline O.N.; Fujita N.; Ishihama A.  
CORPORATE SOURCE: A. Ishihama, Department of Molecular Genetics,  
National Institute of Genetics, Mishima, Shizuoka  
411-8540, Japan.  
E-mail: aishiham@lab.nig.ac.jp  
SOURCE: Journal of Biological Chemistry, (2000), 275/2  
(1119-1127), 37 reference(s)  
CODEN: JBCHA3 ISSN: 0021-9258  
DOCUMENT TYPE: Journal; Article  
COUNTRY: United States  
LANGUAGE: English  
SUMMARY LANGUAGE: English

AN 2000:30051162 BIOTECHNO  
AB Conformational changes within the carboxyl-terminal domain of the  
Escherichia coli polymerase  $\alpha$ -subunit ( $\alpha$ -CTD) upon  
**interaction** with the **DNA** UP element or the  
transcription factor cAMP receptor protein (CRP) were studied by  
monitoring the spectral parameters of a **fluorescent** dye,  
fluorescein **mercuric acetate**, conjugated to various  
positions of  $\alpha$ -CTD. When fluorescein **mercuric**  
**acetate** was conjugated to Cys located on helix I and the loop  
between helices III and IV, the spectral changes typical for **DNA**  
**interaction** were observed for the RNA polymerase-promoter binary  
complex with UP element-dependent rrnBP1 and the ternary complex with the  
CRP-dependent uxuAB promoter in the presence of cAMP/CRP. Likewise, the  
chemical nuclease iron-(p-bromoacetamidobenzyl)-EDTA conjugated to  
Cys-269 or Cys-272 introduced CRP-dependent cleavage of the uxuAB  
promoter, as in the case of rrnBP1 (Murakami, K., Owens, J. T., Belyaeva,  
T. A., Meares, C. F., Bushy, S. J. W., and Ishihama, A. (1997) Proc.  
Natl. Acad. Sci. U. S. A. 94, 11274- 11278), indicating that CRP  
rearranges the topology of the **DNA** contact surface in  
 $\alpha$ -CTD. Conformational changes in  $\alpha$ -CTD were also observed  
upon formation of a binary complex with the uxuAB (in the absence of CRP)  
and factor-independent T7D promoters. The spectral changes suggested that  
helix IV of  $\alpha$ -CTD approaches the negatively charged phosphate  
moiety of **DNA**. In agreement with this prediction,  
iron-(p-bromoacetamidobenzyl)-EDTA conjugated to Cys-309 induced  
extensive **DNA** cleavage upstream from the uxuAB promoter - 35  
element. We propose that helix IV of  $\alpha$ -CTD is involved in direct  
**interaction** with some promoters.

L9 ANSWER 2 OF 3 BIOTECHNO COPYRIGHT 2006 Elsevier Science B.V. on STN  
DUPLICATE

ACCESSION NUMBER: 1998:28191837 BIOTECHNO  
TITLE: Monitoring of RNA polymerase-**DNA** UP element  
**interaction** by a **fluorescent** probe  
conjugated to  $\alpha$  subunit  
AUTHOR: Ozoline O.N.; Fujita N.; Murakami K.; Ishihama A.  
CORPORATE SOURCE: A. Ishihama, National Institute of Genetics,  
Department of Molecular Genetics, Mishima, Shizuoka  
411, Japan.  
E-mail: aishiham@lab.nig.ac.jp  
SOURCE: European Journal of Biochemistry, (15 APR 1998), 253/2  
(371-381), 32 reference(s)  
CODEN: EJBCAI ISSN: 0014-2956  
DOCUMENT TYPE: Journal; Article  
COUNTRY: Germany, Federal Republic of  
LANGUAGE: English  
SUMMARY LANGUAGE: English

AN 1998:28191837 BIOTECHNO  
AB The carboxy-terminal domain (CTD) of Escherichia coli RNA polymerase a  
subunit was specifically modified by a reporter label, fluorescein  
**mercuric acetate** (FMMA), conjugated to Cys269 on the

surface of UP element recognition helix. The modified enzyme was used to investigate RNA polymerase **interaction** with different promoters, either with or without an UP element. In a single- round transcription assay, the activity of modified RNA polymerase was found to decrease as measured with rrnBP1, trpP and lacP2 promoters but not with many other promoters including mutant rrnBP1 without the UP element, supporting the idea that Cys269 or the domain including Cys269 is involved in UP element recognition. Both trpP and lacP2 have sequence similarity to the rrnBP1 UP element. The chemical modification of RNA polymerase, however, did not affect an apparent equilibrium dissociation constant with rrnBP1, as measured by gel-retardation assays, indicating that the **DNA-binding** ability is retained even after FMMA conjugation. **Interaction** with the rrnBP1 UP element led to substantial alterations in the spectral parameters of the reporter label, which are different from those induced by complex formation with promoters without UP elements. A pronounced spectral blue shift suggests that the labeled surface of aCTD closely approaches the charged UP **DNA** helix. These observations imply that the **fluorescent** labeling at Cys269 can be used as a good tool for monitoring the presence or absence of an UP element in a given promoter. Spectral parameters of the label displayed the spectral blue shift when the modified RNA polymerase interacted with trpP, supporting the prediction that this promoter carries an rrnBP1-type UP element.

L9 ANSWER 3 OF 3 CONFSCI COPYRIGHT 2006 CSA on STN

ACCESSION NUMBER: 78:80091 CONFSCI

DOCUMENT NUMBER: 79020067

TITLE: **Interaction of a fluorescent reagent, fluorescein mercuric acetate, with DNA**

AUTHOR: Takeuchi, S.

SOURCE: Abstracts (Eng) at congress included in registration, after for information: Prof. F. Oosawa, Sec/Gen, 6th Internatl. Biophysics Cong., Dept. of Biophysical Engineering, Osaka Univ., Toyonaka, Osaka 560, Japan.. Meeting Info.: Sixth International Biophysics Congress (783 2027). Kyoto, Japan. 3-9 Sept 78. International Union of Pure and Applied Biophysics.

DOCUMENT TYPE: Conference Article

FILE SEGMENT: DCCP

LANGUAGE: UNAVAILABLE

=> DNA and (fluorescent or fluorescence) and metal and (quenching or quenched or quenches)

L10 0 FILE AGRICOLA  
 L11 18 FILE BIOTECHNO  
 L12 0 FILE CONFSCI  
 L13 0 FILE HEALSAFE  
 L14 0 FILE IMSDRUGCONF  
 L15 14 FILE LIFESCI  
 L16 19 FILE PASCAL

TOTAL FOR ALL FILES

L17 51 DNA AND (FLUORESCENT OR FLUORESCENCE) AND METAL AND (QUENCHING OR QUENCHED OR QUENCHES)

=> l17 and complex

L18 0 FILE AGRICOLA  
 L19 5 FILE BIOTECHNO  
 L20 0 FILE CONFSCI  
 L21 0 FILE HEALSAFE  
 L22 0 FILE IMSDRUGCONF  
 L23 7 FILE LIFESCI  
 L24 6 FILE PASCAL

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L25 18 L17 AND COMPLEX

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L26 15 DUP REM L25 (3 DUPLICATES REMOVED)

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ACCESSION NUMBER: 2005-0173877 PASCAL  
COPYRIGHT NOTICE: Copyright .COPYRGT. 2005 INIST-CNRS. All rights reserved.  
TITLE (IN ENGLISH): Simultaneous binding of meso-tetrakis(N-methylpyridinium-4-yl)porphyrin and 4',6-diamidino-2-phenylindole at the minor grooves of poly(dA)poly(dT) and poly[d(A-T).sub.2] :  
**Fluorescence** resonance energy transfer between DNA bound drugs  
AUTHOR: BIAO JIN; HYUN MEE LEE; LEE Young-Ae; JAE HONG KO; KIM Cheol; KIM Seog K.  
CORPORATE SOURCE: Department of Chemistry, Yeungnam University, 214-1 Dae-dong, Kyongsan City, Kyung-buk, 712-749, Korea, Republic of; Department of Fine Chemistry, Seoul National University of Technology, 172 Kongneung 2-dong, Seoul, 139-743, Korea, Republic of  
SOURCE: Journal of the American Chemical Society, (2005), 127(8), 2417-2424, 25 refs.  
ISSN: 0002-7863 CODEN: JACSAT  
DOCUMENT TYPE: Journal  
BIBLIOGRAPHIC LEVEL: Analytic  
COUNTRY: United States  
LANGUAGE: English  
AVAILABILITY: INIST-551, 354000126391500250

AN 2005-0173877 PASCAL  
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AB The spectral properties of meso-tetrakis(N-methylpyridinium-4-yl)porphyrin (TMPyP) bound to poly(dA).poly(dT) and poly[d(A-T).sub.2] in the presence and in the absence of 4',6-diamidino-2-phenyl-indole (DAPI) have been studied. DAPI fits deeply into the minor groove of both poly(dA).poly(dT) and poly[d(A-T).sub.2], and TMPyP is also situated at the minor groove. The nature of the absorption, circular dichroism (CD), and flow linear dichroism (LD) spectra of the TMPyP-poly(dA).poly(dT) and -poly[d(A-T).sub.2] **complexes** in the Soret band is essentially unaffected whether the minor groove is blocked by DAPI or not, although small variations been noticed in the presence of DAPI. Furthermore, a close analysis of the reduced LD spectrum in the Soret band results in angles of .eqvsim.80° and 55° between transition moments of the TMPyP and DNA helix axes in the absence of DAPI. All these observations indicate that the side of TMPyP whose structure resembles that of classical minor groove binding drugs does not fit deeply into the minor groove. This suggests that TMPyP binds across the minor groove: two positively charged pyridiniumyl rings interact electrostatically with negatively charged phosphate groups of DNA. When DAPI and TMPyP are simultaneously bound to poly(dA).poly(dT) or poly[d(A-T).sub.2], the **fluorescence** intensity of DAPI decreases as TMPyP concentration increases, indicating that the excited energy of DAPI is transferred to TMPyP.

L26 ANSWER 2 OF 15 LIFESCI COPYRIGHT 2006 CSA on STN  
ACCESSION NUMBER: 2006:25859 LIFESCI  
TITLE: Non-cognate Enzyme-DNA Complex:  
Structural and Kinetic Analysis of EcoRV Endonuclease Bound to the EcoRI Recognition Site GAATTC  
AUTHOR: Hiller, D.A.; Rodriguez, A.M.; Perona, J.J.  
CORPORATE SOURCE: and Interdepartmental Program in Biomolecular Science and Engineering, University of California at Santa Barbara, Santa Barbara, CA 93106-9510, USA; E-mail: perona@chem.ucsb.edu



SOURCE: Journal of Molecular Biology [J. Mol. Biol.], (20051118)  
vol. 354, no. 1, pp. 121-136.  
ISSN: 0022-2836.

DOCUMENT TYPE: Journal  
FILE SEGMENT: N  
LANGUAGE: English  
SUMMARY LANGUAGE: English

AB The crystal structure of EcoRV endonuclease bound to non-cognate DNA at 2.0A resolution shows that very small structural adaptations are sufficient to ensure the extreme sequence specificity characteristic of restriction enzymes. EcoRV bends its specific GATATC site sharply by 50 super(o) into the major groove at the center TA step, generating unusual base-base interactions along each individual DNA strand. In the symmetric non-cognate complex bound to GAATTC, the center step bend is relaxed to avoid steric hindrance caused by the different placement of the exocyclic thymine methyl groups. The decreased base-pair unstacking in turn leads to small conformational rearrangements in the sugar-phosphate backbone, sufficient to destabilize binding of crucial divalent metal ions in the active site. A second crystal structure of EcoRV bound to the base-analog GAAUTC site shows that the 50 super(o) center-step bend of the DNA is restored. However, while divalent metals bind at high occupancy in this structure, one metal ion shifts away from binding at the scissile DNA phosphate to a position near the 3'-adjacent phosphate group. This may explain why the 10 super(4)-fold attenuated cleavage efficiency toward GAATTC is reconstituted by less than tenfold toward GAAUTC. Examination of DNA binding and bending by equilibrium and stopped-flow fluorescence quenching and fluorescence resonance energy transfer (FRET) methods demonstrates that the capacity of EcoRV to bend the GAATTC non-cognate site is severely limited, but that full bending of GAAUTC is achieved at only a threefold reduced rate compared with the cognate complex. Together, the structural and biochemical data demonstrate the existence of distinct mechanisms for ensuring specificity at the bending and catalytic steps, respectively. The limited conformational rearrangements observed in the EcoRV non-cognate complex provide a sharp contrast to the extensive structural changes found in a non-cognate BamHI-DNA crystal structure, thus demonstrating a diversity of mechanisms by which restriction enzymes are able to achieve specificity.

L26 ANSWER 3 OF 15 LIFESCI COPYRIGHT 2006 CSA on STN DUPLICATE 1  
ACCESSION NUMBER: 2004:104272 LIFESCI  
TITLE: Controlled three-dimensional immobilization of biomolecules on chemically patterned surfaces  
AUTHOR: Biebricher, A.; Paul, A.; Tinnefeld, P.; Goelzhaeuser, A.; Sauer, M.  
CORPORATE SOURCE: Fakultaet fuer Physik, Universitaet Bielefeld, Universitaetsstr. 25, 33615, Bielefeld, Germany; E-mail: goelzhaeuser@physik.uni-bielefeld.de  
SOURCE: Journal of Biotechnology [J. Biotechnol.], (20040800) vol. 112, no. 1-2, pp. 97-107. Physics of Single-Molecule Processes and Molecular Recognition in Organic Systems-Fundamental Interdisciplinary Research and its Consequences for Biotechnology.  
ISSN: 0168-1656.

DOCUMENT TYPE: Journal  
FILE SEGMENT: W3  
LANGUAGE: English  
SUMMARY LANGUAGE: English

AB We used electron-beam lithography to fabricate chemical nanostructures, i.e. amino groups in aromatic self-assembled monolayers (SAMs) on gold surfaces. The amino groups are utilized as reactive species for mild covalent attachment of fluorescently labeled proteins. Since non-radiative energy transfer results in strong quenching of fluorescent dyes in the vicinity of the metal surfaces, different labeling strategies were investigated. Spacers of varying length were introduced between the gold surface and the fluorescently labeled proteins. First, streptavidin was directly coupled to the amino groups of the SAMs via a glutaraldehyde linker and fluorescently labeled biotin

(X-Biotin) was added, resulting in a distance of similar to 2 nm between the dyes and the surface. Scanning confocal **fluorescence** images show that efficient energy transfer from the dye to the surface occurs, which is reflected in poor signal-to-background (S/B) ratios of similar to 1. Coupling of a second streptavidin layer increases the S/B-ratio only slightly to similar to 2. The S/B-ratio of the **fluorescence** signals could be further increased to similar to 4 by coupling of an additional fluorescently labeled antibody layer. Finally, we introduced tetraethylenepentamine as functional spacer molecule to diminish **fluorescence quenching** by the surface. We demonstrate that the use of this spacer in combination with multiple antibody layers enables the controlled fabrication of highly **fluorescent** three-dimensional nanostructures with S/B-ratios of >20. The presented technique might be used advantageously for the controlled three-dimensional immobilization of single protein or **DNA** molecules and the well-defined assembly of protein **complexes**.

L26 ANSWER 4 OF 15 PASCAL COPYRIGHT 2006 INIST-CNRS. ALL RIGHTS RESERVED.  
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ACCESSION NUMBER: 2003-0364427 PASCAL  
COPYRIGHT NOTICE: Copyright .COPYRGT. 2003 INIST-CNRS. All rights reserved.  
TITLE (IN ENGLISH): Signal transduction through dye-labeled M-DNA Y-branched junctions: Switching modulated by chemical reduction of anthraquinone  
AUTHOR: WETTIG Shawn D.; BARE Grant A.; SKINNER Ryan J. S.; LEE Jeremy S.  
CORPORATE SOURCE: Department of Biochemistry, University of Saskatchewan, 107 Wiggins Avenue, Saskatoon, Saskatchewan, S7N 5E5, Canada  
SOURCE: Nano letters : (Print), (2003), 3(5), 617-622, 47 refs.  
ISSN: 1530-6984  
DOCUMENT TYPE: Journal  
BIBLIOGRAPHIC LEVEL: Analytic  
COUNTRY: United States  
LANGUAGE: English  
AVAILABILITY: INIST-27369, 354000118028250110

AN 2003-0364427 PASCAL  
CP Copyright .COPYRGT. 2003 INIST-CNRS. All rights reserved.  
AB **Metal-DNA (M-DNA)** is a **complex** formed between duplex **DNA** and divalent **metal** ions which facilitates electron transfer. In this study, 90 base-pair **DNA** Y-branched junctions were prepared with the electron donor fluorescein attached to one arm and electron acceptors, rhodamine or anthraquinone, to the other arms. Upon formation of M-DNA, the **fluorescence** of fluorescein was **quenched** by the electron acceptors, demonstrating that electron transfer could occur through the junction. As well, the **quenching** was modulated by chemical reduction of anthraquinone, mimicking a chemical switch. Base-pairing defects at the point of the Junction were observed to have only a small impact on the **quenching**, demonstrating the robust nature of electron transfer in M-DNA. Therefore, M-DNA may have extraordinary potential for the development of nanoelectronic devices.

L26 ANSWER 5 OF 15 LIFESCI COPYRIGHT 2006 CSA on STN

ACCESSION NUMBER: 2003:18355 LIFESCI  
TITLE: Long Range Molecular Wire Behaviour in a **Metal Complex of DNA**  
AUTHOR: Aich, P.; Skinner, R.J.S.; Wettig, S.D.; Steer, R.P.; Lee, J.S.  
CORPORATE SOURCE: Department of Biochemistry, University of Saskatchewan, 107 Wiggins Road, Saskatoon, Saskatchewan, S7N 5E5, Canada  
SOURCE: Journal of Biomolecular Structure and Dynamics [J. Biomol. Struct. Dyn.], (20020800) vol. 20, no. 1, pp. 93-98.  
ISSN: 0739-1102.  
DOCUMENT TYPE: Journal  
FILE SEGMENT: N

LANGUAGE: English

SUMMARY LANGUAGE: English

AB M-DNA is a complex of metal ions such as Zn super(2+) with duplex DNA. Previous results showed that the fluorescence of a donor fluorophore was quenched when an acceptor fluorophore was placed at the opposite end of a short M-DNA duplex. In order to investigate further the molecular wire behaviour of M-DNA, 30-mer duplexes were constructed with fluorescein as donor and rhodamine, pyrene and the cyanine dyes, Cy5 and Cy5.5 as acceptors. Good quenching was observed in all cases even though the efficiency of resonance energy transfer was calculated to be < 5%. The distance dependence of quenching was investigated by preparing doubly-labelled duplexes ranging in length from 20 to 1,000 base pairs. Upon formation of M-DNA significant quenching of the fluorescence of the donor fluorophore was observed in duplexes up to 500 base pairs in length. The amount of quenching decreased with increasing length of the duplexes with a shallow distance dependence. The results are consistent with an electron transfer mechanism in which the electron hops between metal centers. This process can occur efficiently over long distances.

L26 ANSWER 6 OF 15 PASCAL COPYRIGHT 2006 INIST-CNRS. ALL RIGHTS RESERVED.  
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ACCESSION NUMBER: 2002-0052253 PASCAL  
COPYRIGHT NOTICE: Copyright .COPYRGT. 2002 INIST-CNRS. All rights reserved.

TITLE (IN ENGLISH): Fluorescence spectral study of interaction of water-soluble metal complexes of Schiff-base and DNA

AUTHOR: LIU Guo-Dong; LIAO Jian-Pei; HUANG Sha-Sheng; SHEN Guo-Li; YU Ru-Qin

CORPORATE SOURCE: College of Chemistry and Chemical Engineering, State Key Laboratory for Chemo/Biosensing and Chemometrics, Hunan University, Changsha, 410082, China; Department of Chemistry, East China Normal University, Shanghai, 200062, China

SOURCE: Analytical sciences, (2001), 17(9), 1031-1036, 31 refs.

ISSN: 0910-6340 CODEN: ANSCEN

DOCUMENT TYPE: Journal

BIBLIOGRAPHIC LEVEL: Analytic

COUNTRY: Japan

LANGUAGE: English

AVAILABILITY: INIST-20879, 354000099280610020

AN 2002-0052253 PASCAL

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AB The fluorescence spectral characteristics and the interaction of several water-soluble metal complexes of Schiff-base with DNA are described. Among the complexes tested, Mn-Schiff-base bound to DNA showed a marked decrease in the fluorescence intensity with a blue shift of the excitation and emission peaks. Some hypochromism in the UV absorption spectra was also observed. KI quenching and competitive binding to DNA between Mn-Schiff-base and ethidium bromide (EB) were studied in connection with other experimental observations to show that the interactive model between Mn-Schiff-base and DNA is an intercalative one. The pH and salt effect on the fluorescence properties was also investigated. The linear relationship between F/F.sub.0 and the concentration of calf thymus DNA covers 3.0 x 10.sup.-.sup.6- 2 x 10.sup.-.sup.4 mol L.sup.-.sup.1, which can be utilized for determining traces of calf thymus DNA with a detection limit of 8.0 x 10.sup.-.sup.7 mol L.sup.-.sup.1 in base pairs.

L26 ANSWER 7 OF 15 PASCAL COPYRIGHT 2006 INIST-CNRS. ALL RIGHTS RESERVED.  
on STN

ACCESSION NUMBER: 2001-0218136 PASCAL  
COPYRIGHT NOTICE: Copyright .COPYRGT. 2001 INIST-CNRS. All rights reserved.

TITLE (IN ENGLISH): Interaction of metal complexes of

bis(salicylidene)-ethylenediamine with **DNA**  
AUTHOR:                          LIU Guo-Dong; YANG Xin; CHEN Zeng-Ping; SHEN Guo-Li;  
                                  YU Ru-Qin  
CORPORATE SOURCE:                College of Chemistry and Chemical Engineering,  
                                  Institute for Chemometrics and Sensing Technology,  
                                  Hunan University, Changsha, 410082, China  
SOURCE:                          Analytical sciences, (2000), 16(12), 1255-1259, 24  
                                  refs.  
                                  ISSN: 0910-6340  CODEN: ANSCEN  
DOCUMENT TYPE:                  Journal  
BIBLIOGRAPHIC LEVEL:            Analytic  
COUNTRY:                        Japan  
LANGUAGE:                        English  
AVAILABILITY:                  INIST-20879, 354000094161090030

AN  2001-0218136  PASCAL  
CP  Copyright .COPYRGT. 2001 INIST-CNRS. All rights reserved.  
AB  The **fluorescence** spectral characteristics and interaction of  
      several **metal complexes** of  
      bis(salicylidene)ethylenediamine (salen) with **DNA** are  
      described. Among the **complexes** tested, Co-salen bound to  
      **DNA** showed a marked decrease in the **fluorescence**  
      intensity with a bathochromic shift of the excitation and emission peaks.  
      A hypochromism in the UV absorption spectra was also observed. KI  
      **quenching** and competitive binding to **DNA** between  
      Co-salen and ethidium bromide were studied in connection with other  
      experimental observations to show that the interactive model between  
      Co-salen and **DNA** is an intercalative one. The pH and salt  
      effect on the **fluorescence** properties was also investigated.  
      The intrinsic binding constant and the binding site number were estimated  
      to be  $5.76 \times 10^6$  mol L<sup>-1</sup> in base pairs and 0.058, respectively.  
      A linear relationship between  $F/F_0$  and the concentration of calf  
      thymus **DNA** covers  $1.0 \times 10^{-6}$  -  $5 \times 10^{-4}$  mol  
      L<sup>-1</sup>, which can be utilized for determining traces of calf  
      thymus **DNA** with a detection limit of  $4.6 \times 10^{-7}$  mol  
      L<sup>-1</sup> in base pairs.

L26 ANSWER 8 OF 15  LIFESCI  COPYRIGHT 2006 CSA on STN  
ACCESSION NUMBER:  2000:106858  LIFESCI  
TITLE:              M-**DNA**: pH Stability, Nuclease Resistance and  
                      Signal Transmission  
AUTHOR:              Aich, P. [editor]; Kraatz, H.-B. [editor]; Lee, J.S.  
                      [editor]; R.H. Sarma [editor]; M.H. Sarma [editor]  
CORPORATE SOURCE:  Department of Biochemistry, Department of Chemistry,  
                      University of Saskatchewan, Saskatoon, Saskatchewan, S7N  
                      5E5, Canada; E-mail: leejs@sask.usask.ca  
SOURCE:              Journal of Biomolecular Structure and Dynamics, (20000328)  
                      vol. 11, no. 2, pp. 297-301.  
                      Meeting Info.: Proc. 11th Conversation in Biomolecular  
                      Stereodynamics. Albany, NY (USA). 15-19 Jun 2000.  
                      ISSN: 0739-1102.  
DOCUMENT TYPE:      Journal  
TREATMENT CODE:    Conference  
FILE SEGMENT:      N  
LANGUAGE:          English  
SUMMARY LANGUAGE:  English

AB  In the presence of divalent **metal ions** (Zn super(2+), Co  
      super(2+), and Ni super(2+)) and at pHs above 8, duplex **DNA**  
      forms a **complex** called M-**DNA**. M-**DNA** can be  
      converted back to B-**DNA** by addition of EDTA or lowering the pH.  
      The stability of M-**DNA** depends on the **metal ion** and/or  
      the sequence of **DNA**. For calf thymus **DNA** the order of  
      stability with decreasing pH is: Ni super(2+) > Co super(2+) > Zn super(2+).  
      The interconversion with B-**DNA** shows hysteresis; once formed  
      Ni-M-**DNA** remains stable for more than one hour at pH 7, but  
      conversion of B-**DNA** to M-**DNA** is slow at pHs below 8.  
      Among synthetic sequences, poly[d(AT)] does not form M-**DNA**  
      whereas the phosphorothioate analogues form only at pH 9.0. In contrast,  
      the Ni-M-**DNA** form of poly[d(GC)] is stable even at pH 6.5. Ni-M-  
      **DNA** is resistant to cleavage by DNase I whereas B-**DNA** is

digested rapidly under identical conditions. The Co super(2+) and Ni super(2+) forms of M-DNA were paramagnetic with increased mass susceptibilities (  $\chi$  ) compared to other **metal complexes**. Signal transmission in M-DNA was tested by constructing duplexes of 54 base pairs with fluorescein (donor) at one end and rhodamine (acceptor) at the other. **Quenching** of fluorescein **fluorescence** was observed for the Zn super(2+) form of M-DNA only when the DNA was labeled with both donor and acceptor. Therefore, the pathway of **quenching** maybe via electron transfer. Taken together, these results suggest that M-DNA is a distinct conformation with tightly bound **metal** ions, and certain forms may be stable under physiological conditions. Furthermore, M-DNA may be used as a molecular wire for signal transmission over long distances.

L26 ANSWER 9 OF 15 PASCAL COPYRIGHT 2006 INIST-CNRS. ALL RIGHTS RESERVED.  
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ACCESSION NUMBER: 2000-0077723 PASCAL  
COPYRIGHT NOTICE: Copyright .COPYRGT. 2000 INIST-CNRS. All rights reserved.  
TITLE (IN ENGLISH): A novel method for determination of DNA by use of molecular 'Light Switch' **complex** of Ru(bipy).sub.2(dppx).sup.2.sup.+  
AUTHOR: LING L.-S.; HE Z.-K.; SONG G.-W.; DIN YUAN; ZENG Y.-E.  
CORPORATE SOURCE: Department of Chemistry, Wuhan University, Wuhan 430072, China  
SOURCE: Analytica chimica acta, (2000), 403(1-2), 209-217, 28 refs.  
ISSN: 0003-2670 CODEN: ACACAM  
DOCUMENT TYPE: Journal  
BIBLIOGRAPHIC LEVEL: Analytic  
COUNTRY: Netherlands  
LANGUAGE: English  
AVAILABILITY: INIST-3950, 354000081430430240

AN 2000-0077723 PASCAL  
CP Copyright .COPYRGT. 2000 INIST-CNRS. All rights reserved.  
AB A novel fluorimetric method was developed for selective determination of DNA with the molecular 'Light Switch' **complex** of Ru(bipy).sub.2(dppx).sup.2.sup.+. The maximum **fluorescence** intensity was produced in the pH range of 9.3-11.5, and the maximum excitation and emission wavelengths were 467 and 595 nm, respectively. Under the optimum conditions, the **fluorescence** intensity was in proportion to the concentration of DNA. The linear range for calfthymus DNA, Salmon sperm DNA and Herring sperm DNA were 0-0.4, 0-0.35 and 0-0.4  $\mu\text{g/ml}$ , respectively. The limits of detection for Calfthymus DNA, Salmon sperm DNA and Herring sperm DNA were 0.75, 0.66 and 1.49, respectively. A satisfactory result was obtained when the proposed method was used to determine DNA in the presence of some coexisting substances.

L26 ANSWER 10 OF 15 BIOTECHNO COPYRIGHT 2006 Elsevier Science B.V. on STN  
DUPLICATE

ACCESSION NUMBER: 1999:29570567 BIOTECHNO  
TITLE: M-DNA: A **complex** between divalent **metal** ions and DNA which behaves as a molecular wire  
AUTHOR: Aich P.; Labiuk S.L.; Tari L.W.; Delbaere L.J.T.; Roesler W.J.; Falk K.J.; Steer R.P.; Lee J.S.  
CORPORATE SOURCE: J.S. Lee, Department of Biochemistry, University of Saskatchewan, 107 Wiggins Road, Saskatoon, Sask. S7N 5E5, Canada.  
E-mail: leejs@sask.usask.ca  
SOURCE: Journal of Molecular Biology, (26 NOV 1999), 294/2 (477-485), 34 reference(s)  
CODEN: JMOBAK ISSN: 0022-2836  
DOCUMENT TYPE: Journal; Article  
COUNTRY: United Kingdom  
LANGUAGE: English

SUMMARY LANGUAGE: English

AN 1999:29570567 BIOTECHNO

AB M-DNA is a **complex** of DNA with divalent **metal** ions (Zn.sup.2.sup.+ , Co.sup.2.sup.+ , or Ni.sup.2.sup.+ ) which forms at pH conditions above 8. Upon addition of these **metal** ions to B-DNA at pH 8.5, the pH decreases such that one proton is released per base-pair per **metal** ion. Together with previous NMR data, this result demonstrated that the imino proton in each base-pair of the duplex was substituted by a **metal** ion and that M-DNA might possess unusual conductive properties. Duplexes of 20 base-pairs were constructed with fluorescein (donor) at one end and rhodamine (acceptor) at the other. Upon formation of M-DNA (with Zn.sup.2.sup.+ ) the **fluorescence** of the donor was 95% **quenched**. **Fluorescence** lifetime measurements showed the presence of a very fast component in the decay kinetics with  $\tau \leq 10$  ps. The fast component was absent in B-DNA and in M-DNA lacking an acceptor chromophore; a result which is only consistent with electron transfer. Efficient signal transduction was also observed between the two fluorophores separated by 54 base-pairs (over 150 Å) in an M-DNA duplex. The addition of a sequence-specific DNA-binding protein prevented the flow of electrons and this was reversed by protease digestion. Therefore, M-DNA behaves as a molecular wire and could be manipulated to prepare self-assembling electronic circuits.

L26 ANSWER 11 OF 15 BIOTECHNO COPYRIGHT 2006 Elsevier Science B.V. on STN

ACCESSION NUMBER: 1998:28460815 BIOTECHNO

TITLE: Interaction of the copper(II) macrocyclic **complexes** with DNA studied by **fluorescence quenching** of ethidium

AUTHOR: Liu C.; Zhou J.; Xu H.

CORPORATE SOURCE: C. Liu, Department of Chemistry, Huazhong Univ. of Science/Technology, Wuhan 430074, China.  
E-mail: 120919@public.wh.hb.cn

SOURCE: Journal of Inorganic Biochemistry, (1998), 71/1-2 (1-6), 28 reference(s)  
CODEN: JIBIDJ ISSN: 0162-0134

PUBLISHER ITEM IDENT.: S0162013498100259

DOCUMENT TYPE: Journal; Article

COUNTRY: United States

LANGUAGE: English

SUMMARY LANGUAGE: English

AN 1998:28460815 BIOTECHNO

AB The **fluorescence quenching** of DNA bound ethidium ion by copper(II) macrocyclic **complexes** has been investigated. The binding constant indicates that the stable assembly can be formed between the DNA and the **metal complex**. The replacement of the fluorophore by the **metal complexes** results in a decrease of the ethidium moles intercalating to the molar DNA base pair and the binding constant of the ethidium to the DNA. The **quenching** of the ethidium excited state by the Cu(II) **complex** follows linear Stern-Volmer behavior. The **quenching** constant decreases regularly with an increase of the ratio of the concentration of the bound ethidium to that of DNA base pair. The dependence of the **quenching** constant on the ratio can be used to estimate binding constants for the **fluorescent** molecule and **metal complexes** to DNA. This method does not depend strongly on the type and the extent of interaction of **metal complexes** with DNA, allowing for the determination of binding constants for **metal complexes** that exhibit small changes in absorption spectra upon binding. The precision of this method will ultimately be governed by outstanding agreement between the **quenching** constant measured and that calculated by using a correlation function of the ratio or the DNA bound concentration of ethidium with **quenching** constant.

L26 ANSWER 12 OF 15 BIOTECHNO COPYRIGHT 2006 Elsevier Science B.V. on STN

ACCESSION NUMBER: 1997:27057002 BIOTECHNO

TITLE: The tyrosine photophysics of a primase-derived peptide are sensitive to the peptide's zinc-bound state: Proof that the bacterial primase hypothetical zinc finger sequence binds zinc

AUTHOR: Griep M.A.; Adkins B.J.; Hromas D.; Johnson S.; Miller J.

CORPORATE SOURCE: M.A. Griep, Department of Chemistry, Center for Biotechnology, University of Nebraska, Lincoln, NE 68588-0304, United States.

SOURCE: Biochemistry, (1997), 36/3 (544-553), 59 reference(s)  
CODEN: BICHAW ISSN: 0006-2960

DOCUMENT TYPE: Journal; Article

COUNTRY: United States

LANGUAGE: English

SUMMARY LANGUAGE: English

AN 1997:27057002 BIOTECHNO

AB A 35-amino acid peptide corresponding to the putative 'zinc finger' sequence of primase was prepared to study its zinc binding properties. When zinc was added to the peptide, it was found that the **fluorescence** quantum yield of the single tyrosine increased by 46% and the average lifetime by 34%. The binding stoichiometry was one zinc per peptide. Below pH 6.0 and above pH 8.5, the zinc-peptide binding affinity was less than 1  $\mu$ M and could be accurately determined. Interpolation from those binding constants suggested that the affinity at pH 7.5 was between 10 and 100 nM. The absorption spectrum of the cobalt(II)-peptide **complex** was consistent with tetrahedral **metal** coordination by three sulfur and one imidazole nitrogen ligands. The peptide affinity for cobalt was less than for zinc, indicating **metal** specificity. Analysis of the **fluorescence** intensity pH profile, circular dichroism spectra, the effect of extrinsic quenchers indicated that at neutral pH (1) the free peptide folded up into a structure to place the tyrosine in an environment protected from solvent, (2) the peptide bound zinc via its three cysteines and one of its histidines resulting in little change to the polypeptide secondary structure or to the tyrosine solvent accessibility, and (3) when the peptide bound zinc, it bound directly to or caused the immobilization of the groups that had been intramolecularly collisionally **quenching** the tyrosine which resulted in the observed increases in tyrosine quantum yield and lifetime.

L26 ANSWER 13 OF 15 LIFESCI COPYRIGHT 2006 CSA on STN

ACCESSION NUMBER: 97:28875 LIFESCI

TITLE: Studies of Co-bleomycin A2 green: Its detailed structural characterization by NMR and molecular modeling and its sequence-specific interaction with DNA oligonucleotides

AUTHOR: Wu, W.; Vanderwall, D.E.; Lui, S.M.; Tang, Xue-Jun; Turner, C.J.; Kozarich, J.W.; Stubbe, J.\*

CORPORATE SOURCE: Deps. Chem. and Biol., Massachusetts Inst. Technol., Cambridge, MA 02139, USA

SOURCE: J. AM. CHEM. SOC., (1996) vol. 118, no. 6, pp. 1268-1280.  
ISSN: 0002-7863.

DOCUMENT TYPE: Journal

FILE SEGMENT: N

LANGUAGE: English

SUMMARY LANGUAGE: English

AB The structure of homogeneous Co-Bleomycin (CoBLM) A2 green (the hydroperoxide form of CoBLM) has been determined using 2D NMR methods and molecular dynamics calculations. Previous studies of Xu et al. reported several possible structures for CoBLM A2 green compatible with their NMR data acquired on a mixture of CoBLM A2 green and A2 brown forms. The availability of the pure CoBLM A2 green, which is stable for months at neutral pH, has allowed the complete assignments of the super(1)H and super(13)C chemical shifts, observation of 55 intramolecular NOEs, and determination of 15 coupling constants allowing the definition of dihedral angles. These results are a prerequisite to determining its structure with duplex DNA of a defined sequence. Two screw sense isomers each containing two possible axial ligands (the primary amine of the beta-aminoalanine and the carbamoyl nitrogen of the mannose) were considered

as viable candidates for the structure of CoBLM A2 green. Using the NMR constraints and molecular dynamics calculations, the structures of all four isomers were generated. One set of screw sense isomers can be readily eliminated from considerations based on violations of NOE and dihedral angle constraints. The other screw sense isomer containing either one or the other of the postulated axial ligands has been examined in some detail. The structure containing the primary amine of beta -aminoalanine as the axial ligand is favored on the basis of coupling constants and NOE arguments, potential energy considerations, model studies, and studies with analogs of BLM. The favored structure is compact with the bithiazole moiety folded back underneath the equatorial plane of the **metal** binding domain, on the same face as the hydroperoxide ligand. The geometry of the peptide linker is very well defined by the observed coupling constants in the valeryl and threonine moieties of the linker. CoBLM A2 green has been studied with two self-complementary oligonucleotides, d(CCAGGCCTGG) and d(CCAGTACTGG). Both of these oligomers possess a single, UV light-mediated cleavage site (C and T, respectively). In addition, **fluorescent quenching** studies have allowed the determination of the first sequence-specific dissociation constants of  $1.7 \times 10^{-7}$  and  $1.5 \times 10^{-7}$  M, respectively. Titration of CoBLM A2 green with each of these oligomers reveals a 1:1 **complex** in slow exchange on the NMR time scale. The upfield shifts of the bithiazole protons in both of these **complexes** are indicative of a partial intercalative mode of binding. The stage is now set for the determination of the structure of the CoBLM A2 green bound sequence specifically to **DNA**.

L26 ANSWER 14 OF 15 BIOTECHNO COPYRIGHT 2006 Elsevier Science B.V. on STN  
DUPLICATE

ACCESSION NUMBER: 1995:25251645 BIOTECHNO  
TITLE: Enhancement of aromatic amino acid-nucleic acid base  
stacking interaction by **metal** coordination  
to base: **Fluorescence** study on a  
tryptophan-Pt(II)-guanine ternary **complex**  
AUTHOR: Kawai H.; Tarui M.; Doi M.; Ishida T.  
CORPORATE SOURCE: Department of Physical Chemistry, Osaka University  
Pharmaceutical Sci., 2-10-65 Kawai, Matsubara, Osaka  
580, Japan.  
SOURCE: FEBS Letters, (1995), 370/3 (193-196)  
CODEN: FEBLAL ISSN: 0014-5793  
DOCUMENT TYPE: Journal; Article  
COUNTRY: Netherlands  
LANGUAGE: English  
SUMMARY LANGUAGE: English

AN 1995:25251645 BIOTECHNO  
AB In order to investigate the effect of the Pt(II) ion on the stacking  
interaction between tryptophan and a guanine base, the **quenching**  
of Trp **fluorescence** was monitored for some systems in the  
absence and presence of the **metal** ion, and the association  
constants were obtained by the analysis of Eadie-Hofstee plots. All  
spectral data suggested that the stacking interaction is enhanced by the  
Pt(II) coordination to the guanine N7 atom. The result indicates the  
importance of the **metal** ion as a bookmark in the specific  
recognition of a nucleic acid base by an aromatic amino acid residue.

L26 ANSWER 15 OF 15 BIOTECHNO COPYRIGHT 2006 Elsevier Science B.V. on STN

ACCESSION NUMBER: 1981:11100023 BIOTECHNO  
TITLE: Copper(I)-bleomycin. A structurally unique  
oxidation-reduction active **complex**  
AUTHOR: Oppenheimer N.J.; Chang C.; Rodriguez L.O.; Hecht S.M.  
CORPORATE SOURCE: Dept. Pharmaceut. Chem., Univ. California, San  
Francisco, Calif. 94143, United States.  
SOURCE: Journal of Biological Chemistry, (1981), 256/4  
(1514-1517)  
CODEN: JBCHA3  
DOCUMENT TYPE: Journal; Article  
COUNTRY: United States  
LANGUAGE: English  
AN 1981:11100023 BIOTECHNO



AB Cu(I) and Cu(II) form stable 1:1 **complexes** with bleomycin (BLM). The affinity of both **metals** for the drug is greater than that of Fe(II). Cu(I)-BLM A.sub.2 binds to calf thymus **DNA** with about the same affinity as Fe(II)-BLM, as judged by **DNA-induced fluorescence quenching** of the bithiazole moiety of BLM. Based on <sup>1</sup>H NMR and potentiometric titration data, the Cu(I) **complexes** of BLM are shown to have geometries very different than those of other BLM-**metal(II) complexes** studied thus far. As Cu(I)-BLM is oxidation-reduction active, its geometry is of importance in defining the structural requirements for BLM activity.

on STN

ACCESSION NUMBER: 1989-0276957 PASCAL  
TITLE (IN ENGLISH): Air **pollution** in an arid **environment**  
: The effects of **copper** smelting on the  
U.S.-Mexico border region  
TITLE (IN FRENCH): Pollution de l'air dans un milieu aride : Les effets  
de la fusion du cuivre sur la region de bordure  
Mexique-Etats Unis  
AUTHOR: VARADY R.G.  
CORPORATE SOURCE: Univ. Arizona, off. arid land studies, Tucson, United  
States  
SOURCE: (1988), 1277-1286, 1 tabl., refs. 2 p.  
Conference: Arid lands today and tomorrow;  
International research and development conference,  
Tucson, 20 Oct 1985  
Published by: Belhaven, London  
Table; Illustrations  
DOCUMENT TYPE: Conference  
BIBLIOGRAPHIC LEVEL: Analytic  
COUNTRY: United Kingdom  
LANGUAGE: English  
AVAILABILITY: BRGM-11645  
AN 1989-0276957 PASCAL

L26 ANSWER 4 OF 10 LIFESCI COPYRIGHT 2006 CSA on STN  
ACCESSION NUMBER: 88:104847 LIFESCI  
TITLE: Effect of heavy metal ions on microorganism aging.  
AUTHOR: Pisanti, F.A.; Lucadamo, L.; Vanzanell, F.; Aloj Totaro, E.  
CORPORATE SOURCE: Univ. Calabria, Dip. Ecol., 87030 Arcavata de Rende,  
Cosenza, Italy  
SOURCE: MAR. POLLUT. BULL., (1988) vol. 19, no. 7, pp. 328-333.  
DOCUMENT TYPE: Journal  
FILE SEGMENT: K; A  
LANGUAGE: English

AB It is known that the presence of copper in the marine mycete *Corollospora*  
*maritima* culture medium enhances growth and lipofuscin production. The  
latter is a fluorescent pigment known as "age pigment". It appeared that  
the determination of lipofuscin, both by the thiobarbituric acid test and  
by measuring the fluorescence on extract in chloroform/methanol, could  
serve as a marker of the presence and the level of **copper**  
**pollution** of sea **environments**. In addition to  
**copper**, almost all other transition metals contain unpaired  
electrons and can thus qualify as radicals. All the transition metals  
induce lipofuscinogenesis in *Corollospora* *maritima*. Lipofuscin could be  
an indicator of environmental contamination by these metals.

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(2006) on STN DUPLICATE 2

ACCESSION NUMBER: 82:78020 AGRICOLA  
DOCUMENT NUMBER: IND82055866  
TITLE: **Copper**, lead, and zinc **pollution**  
of soil **environment** India.  
AUTHOR(S): Haque, M.A.; Subramanian, V.  
AVAILABILITY: DNAL (QH545.A1C7)  
SOURCE: CRC critical reviews in environmental control., 1982  
Vol. 12, No. 1. p. 13-68  
Publisher: Boca Raton, Fla., CRC Press.  
ISSN: 0007-8999  
NOTE: Includes 256 ref.  
DOCUMENT TYPE: Article  
FILE SEGMENT: U.S. Imprints not USDA, Experiment or Extension  
LANGUAGE: English

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ACCESSION NUMBER: 82:142803 AGRICOLA  
DOCUMENT NUMBER: IND82113278  
TITLE: Age accumulation of **copper** and cadmium in wild populations of small mammals Environmental **pollution**. Heavy metals in the **environment** : International Conference, Amsterdam, September 1981.  
AUTHOR(S): Hunter, B.A.; Johnson, M.S.; Thompson, D.J.; Holden, H.  
AVAILABILITY: DNAL (TD196.M4I57 1981)  
SOURCE: Heavy Met Environ, 1981 p. 263-266  
Publisher: Edinburgh, U. K. : CEP Consultants, 1981.  
ISBN: 0905941047.  
NOTE: 13 ref.  
DOCUMENT TYPE: Article  
FILE SEGMENT: Non-U.S. Imprint other than FAO  
LANGUAGE: English

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(2006) on STN

ACCESSION NUMBER: 82:124578 AGRICOLA  
DOCUMENT NUMBER: IND82098419  
TITLE: Influence of **copper** industry on degree of **environment pollution** with heavy metals Poland.  
Wplyw hutnictwa miedzi na stopien skazenia metalami ciezкими srodowiska przyrodniczego.  
AUTHOR(S): Pacyna, J.; Zwodziak, J.; Zwodziak, A.  
AVAILABILITY: DNAL (20.5 P84)  
SOURCE: Postepy nauk rolniczych., 1981 Vol. 28 p. 127-134 ill  
Publisher: Warszawa, Poland, Panstwowe Wydawn.  
Rolnicze i Lesne.  
ISSN: 0032-5457  
NOTE: 7 ref.  
DOCUMENT TYPE: Article  
FILE SEGMENT: Non-U.S. Imprint other than FAO  
LANGUAGE: Polish

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ACCESSION NUMBER: 78:196812 AGRICOLA  
DOCUMENT NUMBER: 78-9177925  
TITLE: **Copper** in the marine **environment**.  
II. [**Pollution**]  
AUTHOR(S): Schmidt, R L  
AVAILABILITY: DNAL (QH545.A1C7)  
SOURCE: CRC Crit Rev Environ Control (Chem Rubber Co), 1978  
Vol. 8, No. 3, pp. 247-291. Ref.  
DOCUMENT TYPE: Journal; Article; General Review; Bibliography  
LANGUAGE: English

L26 ANSWER 9 OF 10 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved.  
(2006) on STN

ACCESSION NUMBER: 78:196813 AGRICOLA  
DOCUMENT NUMBER: 78-9177926  
TITLE: **Copper** in the marine **environment**.  
I. [**Pollution**]  
AUTHOR(S): Schmidt, R L  
AVAILABILITY: DNAL (QH545.A1C7)  
SOURCE: CRC Crit Rev Environ Control (Chem Rubber Co), 1978  
Vol. 8, No. 2, pp. 101-152. Ref.  
DOCUMENT TYPE: Journal; Article; General Review; Bibliography  
LANGUAGE: English

L26 ANSWER 10 OF 10 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved.  
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ACCESSION NUMBER: 78:85430 AGRICOLA  
DOCUMENT NUMBER: 78-9063250  
TITLE: Certain problems of the impact of copper industry upon forest **environment** in the Legnica-Glogow **Copper** District [Injuries due to air and soil **pollution**]  
Niektore zagadnienia wplywu przemyslu miedzioowego na srodowisko lesne w Legnicko-Glogowskim Okregu Miedziowym  
AUTHOR(S): Duda, S  
AVAILABILITY: DNAL (99.8 SY52)  
SOURCE: Sylwan, Oct 1977 Vol. 121, No. 10, pp. 39-45. Ref.  
DOCUMENT TYPE: Journal; Article  
LANGUAGE: Polish

CORPORATE SOURCE: Chemical Institute, Catholic University of Valparaiso, Post Office Box 4059, Valparaiso, Chile  
SOURCE: Bulletin of Environmental Contamination and Toxicology [Bull. Environ. Contam. Toxicol.], (20020000) vol. 69, no. 1, pp. 139-146.  
ISSN: 0007-4861.  
DOCUMENT TYPE: Journal  
FILE SEGMENT: X  
LANGUAGE: English

AB Selenium (Se) toxicity in aquatic ecosystems has been the subject of extensive studies during the last decade. Atmospheric emissions from coal power plants and **copper** refineries may lead to Se deposition into aquatic systems. Congenital malformations as well as **cancer** in birds and fish have been detected in lakes contaminated by Se (Ohlendorf et al. 1988 and 1990; Saiki et al. 1993; Welsh and Maughan 1994; Lemly 1995; Schultz and Hermanutz 1990; Hermanutz 1992; Lemly 1993). The fact that Se can bioaccumulate and biomagnify further increases the risk of ecotoxicity (Maier and Knight 1994).

L9 ANSWER 8 OF 13 HEALSAFE COPYRIGHT 2006 CSA on STN DUPLICATE 3

ACCESSION NUMBER: 1999:785 HEALSAFE  
TITLE: Angular and fibrous particles in lung in relation to silica-induced diseases  
AUTHOR: Dufresne, A.; Begin, R.; Dion, C.; Jagirdar, J.; Rom, W.N.; Loosereewanich, P.; Muir, D.C.F.; Ritchie, A.C.; Perrault, G.  
CORPORATE SOURCE: McGill University, Department of Occupational Health, Faculty of Medicine, 3450 University Street, Suite 22, Montreal, Quebec H3A 2A7, Canada  
SOURCE: Int. Arch. Occup. Environ. Health, (19980600) vol. 71, no. 4, pp. 263-269.  
ISSN: 0340-0131.

DOCUMENT TYPE: Journal  
FILE SEGMENT: H  
LANGUAGE: English  
SUMMARY LANGUAGE: English

AB Introduction: The lung concentration of angular and fibrous particles was measured in cases of lung fibrosis only, in cases of lung fibrosis and lung **cancer**, and in cases of lung **cancer** only. These patients worked in different trades (mining, foundries, construction and were not a homogeneous group of exposed workers. Material and methods: Particles, both angular and fibrous, were extracted from lung parenchyma by a bleach digestion method, mounted on **copper** microscopic grids by a carbon replica technique, and analyzed by transmission electron microscopy (TEM) and energy-dispersive spectroscopy (EDS). The quartz concentration was also determined by X-ray diffraction (XRD) on a silver membrane filter after extraction from the lung parenchyma. Results: (1) Lung **cancer** and lung fibrosis cases retained more metal-rich particles ( $P = 0.02$ ) and more angular particles of all sorts ( $P = 0.009$ ) than did lung fibrosis cases only, and the differences were statistically significant. (2) However, more quartz was retained in the lungs in lung fibrosis cases than in lung fibrosis or lung **cancer** cases, but the difference in the concentrations was not statistically significant. (3) More ferruginous bodies were retained in the lungs in lung **cancer** and lung fibrosis cases than in cases of lung fibrosis only, and the difference in the concentrations was statistically significant ( $P = 0.02$ ). Conclusion: Results obtained from lung tissue must always be interpreted cautiously. However, these results are consistent with the hypothesis that workers in some trades such as foundries were exposed not only to quartz but also to asbestos, ceramic fibers, metal-rich non fibrous particles, and other likely carcinogenic chemicals. The wide range of particle types identified in the lungs of these workers illustrates the complexity of trying to determine disease origins in these work **environments**. Epidemiology studies have to control for the exposure to these carcinogens as well as for smoking habits.

L9 ANSWER 9 OF 13 HEALSAFE COPYRIGHT 2006 CSA on STN DUPLICATE 4

ACCESSION NUMBER: 1999:782 HEALSAFE  
TITLE: Update of **cancer** incidence among workers at a

**AUTHOR:** copper/nickel smelter and nickel refinery  
Anttila, A.; Pukkala, E.; Aitio, A.; Rantanen, T.;  
Karjalainen, S.  
**CORPORATE SOURCE:** Finnish Cancer Registry, Liisankatu 21 B, FIN-00170  
Helsinki, Finland  
**SOURCE:** Int. Arch. Occup. Environ. Health, (19980600) vol. 71, no.  
4, pp. 245-250.  
ISSN: 0340-0131.  
**DOCUMENT TYPE:** Journal  
**FILE SEGMENT:** H  
**LANGUAGE:** English  
**SUMMARY LANGUAGE:** English

**AB** Objectives: To assess **cancer** risk among nickel-exposed workers.  
Methods: We updated **cancer** incidence among 1388 workers employed  
for at least 3 months at a **copper/nickel** smelter and nickel  
refinery in Harjavalta, Finland. There were 1155 workers exposed to nickel  
during the period 1960-1985 in the smelter (566 workers), repair shop (239  
workers), or refinery (418 workers). **Cancer** incidence was  
followed through the files of the Finnish **Cancer** Registry up to  
31 December 1995. For overall **cancer** and for a priori selected  
specific **cancer** types the ratio of observed to expected numbers  
of cases was computed as a standardized incidence ratio (SIR), controlled  
for age, gender, and calendar period and using the region-specific rates  
as a reference. Results: The overall **cancer** incidence among both  
nickel-exposed and unexposed subcohorts was at the expected level. A small  
increase in lung **cancer** incidence, which reached statistical  
significance among workers with a latency exceeding 20 years, was observed  
among the smelter workers exposed to insoluble nickel compounds. Among  
workers in the refinery, who were exposed primarily to nickel sulfate at  
levels below 0.5 mg/m super(3) as well as to low concentrations of other  
nickel compounds, there was an increased risk for nasal **cancer**  
(SIR 41.1, 95% CI 4.97-148), positively associated with latency and  
duration of employment, and an excess risk for stomach (SIR 4.98, 95% CI  
1.62-11.6) and lung (SIR 2.61, 95% CI 0.96-5.67) **cancers**.  
Conclusions: Since elevated nasal and lung **cancer** risks were  
confined to the refinery, where the primary exposure was to nickel  
sulfate, it is likely that nickel sulfate is mainly responsible for the  
elevated respiratory **cancer** risk. We cannot rule out whether the  
excess stomach **cancer** risk is a chance finding, or related to  
the working **environment**.

L9 ANSWER 10 OF 13 BIOTECHNO COPYRIGHT 2006 Elsevier Science B.V. on STN  
**ACCESSION NUMBER:** 1998:28110745 BIOTECHNO  
**TITLE:** Health impact of polychlorinated dibenzo-p-dioxins: A  
critical review  
**AUTHOR:** Mukerjee D.  
**CORPORATE SOURCE:** Dr. D. Mukerjee, Natl. Ctr. for Environ. Assessment,  
US Environmental Protection Agency, Cincinnati, OH  
45268, United States.  
**SOURCE:** Journal of the Air and Waste Management Association,  
(1998), 48/2 (157-165), 126 reference(s)  
CODEN: JIJME4 ISSN: 1047-3289  
**DOCUMENT TYPE:** Journal; Conference Article  
**COUNTRY:** United States  
**LANGUAGE:** English  
**SUMMARY LANGUAGE:** English

**AN** 1998:28110745 BIOTECHNO  
**AB** Polychlorinated dibenzo-p-dioxins (PCDDs), commonly known as dioxins,  
form as unwanted impurities in the manufacturing of chlorophenol and its  
derivatives - pulp and paper - and in the combustion of municipal,  
sewage- sludge, hospital, and hazardous waste. Combustion, in presence of  
a chlorine donor, seems to be a major source of these compounds. High  
levels of dioxins are also emitted from metallurgical industries  
including **copper** smelters, electric furnaces in steel mills,  
and wire reclamation incinerators. Trace levels are detectable in  
emissions from motor vehicles using leaded gasoline or diesel fuel, in  
forest fires, and in residential wood burning. Extremely persistent and  
widely distributed in the **environment**, PCDDs have been detected  
in all three primary and many secondary media. Releases into the air

occur mainly from combustor emissions. Atmospheric dispersion, deposition, and subsequent accumulation in the food chain seem to be the major pathways of exposure to the general population. Residues of these chemicals have been detected in soil, sediment, fish, meat, cow's milk, human adipose tissue, and mothers' milk. In general, these chemicals have high lipophilicity. The elimination half-life of 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) in humans is approximately 7-11 years. Very little human toxicity data from exposure to PCDDs are available. Health-effect data obtained from occupational settings in humans are based on exposure to chemicals contaminated with TCDD. It produces a spectrum of toxic effects in animals and is one of the most toxic chemicals known. Most of the toxicity data available on TCDD are from high-dose oral exposures to animals. Very few percutaneous and no inhalation exposure data are available in the literature. There is a wide range of difference in sensitivity to PCDD lethality in animals. The signs and symptoms of poisoning with chemicals contaminated with TCDD in humans are analogous to those observed in animals. Dioxin exposures to humans are associated with increased risk of severe skin lesions such as chloracne and hyperpigmentation, altered liver function and lipid metabolism, general weakness associated with drastic weight loss, changes in activities of various liver enzymes, depression of the immune system, and endocrine- and nervous-system abnormalities. It is a potent teratogenic and fetotoxic chemical in animals. A very potent promoter in rat liver carcinogenesis, TCDD also causes **cancers** of the liver and other organs in animals. Populations occupationally or accidentally exposed to chemicals contaminated with dioxin have increased incidences of soft-tissue sarcoma and non-Hodgkin's lymphoma. No comprehensive studies have been conducted to determine any health impact to the general population from environmental exposure to PCDDs. This paper presents a brief review of relevant animal and human data for projecting any possible health effects from environmental exposures to PCDDs.

L9 ANSWER 11 OF 13 LIFESCI COPYRIGHT 2006 CSA on STN

ACCESSION NUMBER: 96:101207 LIFESCI

TITLE: Antioxidant defences against reactive oxygen species causing genetic and other damage

AUTHOR: Anderson, D.

CORPORATE SOURCE: BIBRA Intl., Woodmansterne Rd., Carshalton, Surrey, SM5 4DS, UK

SOURCE: MUTAT. RES. - FUNDAM. MOL. MECH. MUTAGEN., (1996) vol. 350, no. 1, pp. 103-108. Special Issue: Mechanisms of Antimutagenesis and Carcinogenesis.. ISSN: 0027-5107.

DOCUMENT TYPE: Journal

FILE SEGMENT: G

LANGUAGE: English

SUMMARY LANGUAGE: English

AB Oxygen, present as 20% of the atmosphere, is a terminal oxidant essential for respiration and other oxidative reactions in all aerobic organisms. During the reduction of molecular oxygen, reactive oxygen species are formed. These free radicals are implicated in many diseases including atherosclerosis, respiratory tract disorders, neurodegenerative disease, inflammatory bowel disease, **cancer** and also in ageing. A free radical is any atom or molecule that contains one or more unpaired electrons. The unpaired electrons alter the chemical reactivity of an atom or molecule, usually making it more reactive than the corresponding non-radical. The chemical reactivity of radicals varies enormously. The hydrogen radical (H super(\*)) containing one proton and one electron is the simplest free radical. By the removal of (H super(\*)) from other molecules, chain reactions are often initiated e.g. during lipid peroxidation. In the human body, solar radiation or low wavelength electromagnetic radiation, such as gamma-rays, from the **environment** can split water to generate the hydroxyl radical, OH, which is very reactive at the site of formation. The body also makes another oxygen radical where the unpaired electron is located on oxygen, superoxide (O sub(2) super(\*-)), but this is poorly reactive. Active phagocytes including neutrophils, monocytes, macrophages and eosinophils, generate large amounts of superoxide in the killing of foreign organisms. However, with chronic inflammation this normal protective mechanism may

itself be damaging. Another physiological free radical is nitric oxide (NO) which is made by the vascular endothelium as a relaxing factor, but excessive nitric oxide can be toxic. Superoxide can react with iron and copper ions to make hydroxyl radicals or can combine with nitric oxide O sub(2) super(\*-) + NO arrow right ONOO super(-) (peroxynitrite). This decomposes into toxic products including nitrogen dioxide gas (NO sub(2)), hydroxyl radical and nitronium ion NO sub(2) super(+).

L9 ANSWER 12 OF 13 LIFESCI COPYRIGHT 2006 CSA on STN

ACCESSION NUMBER: 95:51851 LIFESCI  
TITLE: Role of **copper** accumulation and metallothionein induction in spontaneous liver **cancer** development in LEC rats  
AUTHOR: Sawaki, M.; Enomoto, K.; Hattori, A.; Tsuzuki, N.; Sugawara, N.; Mori, M.  
CORPORATE SOURCE: Dep. Pathol., Sch. Med., Sapporo Med. Univ., South 1, West 17, Chuo-Ku, Sapporo 060, Japan  
SOURCE: CARCINOGENESIS, (1994) vol. 15, no. 9, pp. 1833-1837.  
ISSN: 0143-3334.  
DOCUMENT TYPE: Journal  
FILE SEGMENT: X  
LANGUAGE: English  
SUMMARY LANGUAGE: English

AB The LEC rat spontaneously develops liver **cancer** after suffering chronic liver injury caused by abnormal **copper** accumulation in the liver, but the role of **copper** accumulation in the induction of liver **cancer** remains obscure. We histochemically and biochemically examined the content of **copper** and metallothionein (MT), a cytoplasmic **copper** binding protein, in spontaneously developed preneoplastic and neoplastic liver lesions and compared them with those in the surrounding liver tissues. Histochemically, the majority of the preneoplastic liver lesions (68%) and liver **cancers** (59%) showed lower **copper** contents than the surrounding liver tissues and no lesions were shown to accumulate more **copper** than the surrounding tissues. A marked heterogeneity in **copper** staining was observed in **cancer** tissues. In contrast, these lesions showed an equal to higher MT content than their surroundings. Biochemical measurements of **copper** and MT in **cancer** tissues supported the histochemical findings. The bromodeoxyuridine (BrdU) labeling index was high in all **cancer** tissues and some of the preneoplastic liver lesions. Parts of the **cancer** tissues with negative or weak staining for **copper** were highly labeled with BrdU. Taking these results together, **copper** accumulation may exert a growth inhibitory effect on surrounding hepatocytes, whereas the hepatocytes in the liver lesions could proliferate, escaping from the effect of **copper** toxicity by increasing their MT induction and lowering **copper** accumulation. Thus, accumulation of **copper** may act as a promoting factor for the development of liver **cancer** in LEC rats by creating a selective growth environment.

L9 ANSWER 13 OF 13 BIOTECHNO COPYRIGHT 2006 Elsevier Science B.V. on STN

ACCESSION NUMBER: 1985:16236138 BIOTECHNO  
TITLE: Depletion of extracellular cysteine with hydroxocobalamin and ascorbate in experimental murine **cancer** chemotherapy  
AUTHOR: Pierson H.F.; Fisher J.M.; Rabinovitz M.  
CORPORATE SOURCE: Laboratory of Pharmacology and Experimental Therapeutics, Division of Cancer Treatment, National Cancer Institute, NIH, Bethesda, MD 20205, United States.  
SOURCE: Cancer Research, (1985), 45/10 (4727-4731)  
CODEN: CNREAS  
DOCUMENT TYPE: Journal; Article  
COUNTRY: United States  
LANGUAGE: English

AN 1985:16236138 BIOTECHNO

AB Treatment of mice bearing P388 lymphocytic leukemia with combined hydroxocobalamin (0.1 mmol/kg) and sodium ascorbate (1.0 mmol/kg) for 10



consecutive days resulted in 70% increase in survival. Treatment with dehydroascorbate (1.0 mmol/kg) similarly increased survival. The extended treatment for 15 days posttumor inoculation failed to improve survival as did lowering the tumor inocula from 10.sup.6 to 10.sup.4 cells in similarly treated mice. P388 cells in primary culture with cystine as a source of cysteine require exogenous thiols or disulfides for growth and also grow with cysteine but only when trace **copper** is sequestered with bathocuproine sulfonate. This is due to the **copper** catalyzed oxidation of cysteine to cystine, which these cells cannot utilize. Cells grew in medium preincubated for 8 h with cysteine and bathocuproine sulfonate, but lysed when the preincubated medium included hydroxocobalamin (10 µM) and sodium ascorbate (100 µM). This defect was corrected by resupplementation with cysteine or cystine plus bishydroxyethyl disulfide after addition of the cells. Further support for cysteine depletion as a factor in therapy is obtained by therapeutic interference with 4-thiamethionine (25 µmol/kg). This mixed disulfide of cysteine and methyl mercaptan enters cells as a methionine analogue, is reduced to supply cysteine, and thus withstands the oxidative environment that limits the utilization of cysteine as a nutrient. These results suggest that dehydroascorbate is generated from combined hydroxocobalamin and ascorbate and accounts for the thiol-prive activity of combined hydroxocobalamin and ascorbate therapy. The ultimate failure of therapy by thiol oxidation may be due to the increased availability of cysteine produced by host tissues, possibly infiltrating macrophages, that occurs independently of extended treatment and the size of the tumor inoculum.

=> copper and pollution and environment

L10 59 FILE AGRICOLA  
 L11 218 FILE BIOTECHNO  
 L12 0 FILE CONFSCI  
 L13 51 FILE HEALSAFE  
 L14 0 FILE IMSDRUGCONF  
 L15 542 FILE LIFESCI  
 L16 2143 FILE PASCAL

TOTAL FOR ALL FILES

L17 3013 COPPER AND POLLUTION AND ENVIRONMENT

=> copper(10A)pollution(15A)environment

L18 6 FILE AGRICOLA  
 L19 1 FILE BIOTECHNO  
 L20 0 FILE CONFSCI  
 L21 0 FILE HEALSAFE  
 L22 0 FILE IMSDRUGCONF  
 L23 2 FILE LIFESCI  
 L24 4 FILE PASCAL

TOTAL FOR ALL FILES

L25 13 COPPER(10A) POLLUTION(15A) ENVIRONMENT

=> dup rem

ENTER L# LIST OR (END):l25

DUPLICATE IS NOT AVAILABLE IN 'IMS DRUGCONF'.

ANSWERS FROM THESE FILES WILL BE CONSIDERED UNIQUE

PROCESSING COMPLETED FOR L25

L26 10 DUP REM L25 (3 DUPLICATES REMOVED)

=> d l26 ibib abs total

L26 ANSWER 1 OF 10 LIFESCI COPYRIGHT 2006 CSA on STN  
 ACCESSION NUMBER: 2003:10527 LIFESCI  
 TITLE: Direct and indirect effects of repeated pollution events on marine hard-substrate assemblages  
 AUTHOR: Johnston, E.L.; Keough, M.J.  
 CORPORATE SOURCE: Department of Zoology, University of Melbourne, Melbourne, Victoria, 3010 Australia  
 SOURCE: Ecological Applications [Ecol. Appl.], (20020800) vol. 12,

no. 4, pp. 1212-1228.

ISSN: 1051-0761.

DOCUMENT TYPE: Journal  
FILE SEGMENT: D  
LANGUAGE: English  
SUMMARY LANGUAGE: English

AB Testing the effects on organisms of a constant exposure to toxicants in uniform environments is unlikely to reflect accurately the majority of toxicant exposures in the field, and environmental managers need tools to help predict impacts especially of pulse toxicant inputs into highly variable natural environments. We investigated the effect of pulse copper pollution events on the development of sessile marine invertebrate assemblages at two sites in Port Phillip Bay, Victoria, Australia. Using a field dosing technique we created localized 2-d copper pollution events close to settlement plates. Pulses were delivered every 2, 4, 8, or 16 wk for the duration of the 16-wk experiments, and the assemblages allowed to develop under these dosing regimes. Pulse pollution events dramatically altered the assemblages at both sites predominantly through a direct negative effect on the densities of large space-occupying tunicates. Most other taxonomic groups responded positively to multiple copper pulses, which was considered a density-mediated indirect effect of the toxicant. In particular, organisms known to be good colonizers but poor competitors for space such as serpulid polychaetes occurred in densities an order of magnitude higher on plates exposed to copper pulses. The responses of the assemblages were predominantly independent of the frequency of pulse pollution events, although a single pulse exposure at the beginning of the experiment had no observable effect when censused at week 16. The impact of these transient pollution events were manifest as changes in the structure of invertebrate assemblages and could persist for some time after the agent of disturbance was removed. The effects of a single pulse copper pollution event on an established (8-wk-old) assemblage were evident for at least a further 8 wk after it occurred.

L26 ANSWER 2 OF 10 BIOTECHNO COPYRIGHT 2006 Elsevier Science B.V. on STN  
DUPLICATE

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TITLE: Diffuse emission and control of copper in urban surface runoff  
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AB Copper washed off from roofs and roads is considered to be a major contribution to diffuse copper pollution of urban environments. In order to guarantee sustainable protection of soils and water, the long-term strategy is to avoid or replace copper containing materials on roofs and facades. Until achievement of this goal, a special adsorber system is suggested to control the diffuse copper fluxes by retention of copper by a mixture of granulated iron-hydroxide (GEH) and calcium carbonate. Since future stormwater runoff concepts are based on decentralised runoff infiltration into the underground, solutions are proposed which provide for copper retention in infiltration sites using GEH adsorption layers. The example of a large copper facade of which runoff is treated in an adsorption trench reveals the first full-scale data on facade runoff and adsorber performance. During the first year of investigation average facade runoff concentrations in the range of 1-10 mg Cu/l are reduced by 96-99% in the adsorption ditch.

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